:L

```
*/ MR.DO.BANK1 LAST EDIT:8/14/83
*******************************
* FINAL LISTING FOR ATARI VCS "MR. DO!"
* NTSC VERSION.... 8/14/83
* BY ED ENGLISH OF INDIVIDEO,INC
*******************************
                              ;
* 1ST 4K BANK OF MR.DO! ->
                              ;
* THIS IS THE MAIN FILE FOR BANK1
* OF MR.DO!
*******************************
TOP2     =    $3012
BEGORG   =    $2000  — $3000
BEGOBJ   =    $8004
                              ;
         LST  ON
*******************************
* ATARI 2600 EQUATE FILE      *
*******************************
         PUT  MR.DO.VCSDEF1
         PAG
*******************************
* RAM DEFINITION & EQUATES    *
*******************************
         PUT  MR.DO.EQU
         PUT  MR.DO.SOUND EQUATES
                              ;
         ORG  BEGORG-4
         DA   BEGORG
         DA   END
         PAG
*******************************
* POWERUP INITIALIZATION      *
*******************************
         PUT  MR.DO.INIT
         PAG
*******************************
* BOTTOM VERTICAL INTERVAL    *
*******************************
         PUT  MR.DO.BOTVI
         PAG
*******************************
* APPLE CONTROL CODE          *
*******************************
         PUT  MR.DO.APPLE
         PAG
*******************************
* VERTICAL RETRACE CODE       *
*******************************
         PUT  MR.DO.VINT
         PAG
*******************************
* JOYSTICK & SWITCH READING   *
*******************************
         PUT  MR.DO.JOYSTICK
         PAG
*******************************
* POWERBALL CONTROL CODE      *
*******************************
         PUT  MR.DO.PWRBALL
                              ;
*******************************
* BANK SWITCH FOR REST OF TOPVI*
```

```
                                 ;
*********************************
* BANK SWITCH FOR REST OF TOPVI*
*********************************
         JMP   TOPSW
         PAG
*********************************
* BANK1 SUBROUTINES             *
*********************************
         PUT   MR.DO.SUBS1
         PAG
         PUT   MR.DO.FIELD.RTNS
         PAG
         OBJ   BEGOBJ+$E07
         ORG   BEGORG+$E07
*********************************
* ORCHARD DATA TABLES           *
*********************************
         PUT   MR.DO.FIELD DATA
         PAG
         OBJ   BEGOBJ+$F00
         ORG   BEGORG+$F00
*********************************
* CHERRY DATA TABLES            *
*********************************
         PUT   MR.DO.CHERRY TABLES
         PAG
         OBJ   BEGOBJ+$FFC
         ORG   BEGORG+$FFC
         DA    PWRUP
END

:PR#0
```

:ASM

```
*/ MR.DO.BANK1 LAST EDIT:8/14/83
*********************************
* FINAL LISTING FOR ATARI VCS "MR. DO!"
* NTSC VERSION.... 8/14/83
* BY ED ENGLISH OF INDIVIDEO,INC
*********************************
                              ;
* 1ST 4K BANK OF MR.DO! ->
                              ;
* THIS IS THE MAIN FILE FOR BANK1
* OF MR.DO!
*********************************
TOP2     =    $3012
BEGORG   =    $2000
BEGOBJ   =    $8004
                              ;
*********************************
* ATARI 2600 EQUATE FILE        *
*********************************
         PUT  MR.DO.VCSDEF1
*FILE: MR.DO.VCSDEF1
*ATARI VCS VIDEO REGS + 6532 RIOT
*********************************
                              ;
ATSYNC   =    $00             ;B1=1 BRINGS GUN HOME.
ATBLNK   =    $01             ;B1=1 TURN GUN OFF.
ATWAIT   =    $02             ;STOP 6507 UNTIL END OF LINE.
ATACTL   =    $04             ;SPRITE/MISSLE A CONTROL-
ATBCTL   =    $05             ;SAME AS ATACTL FOR SPRITE B.
ATACOL   =    $06             ;SPRITE/MISSLE A COLOR.
ATBCOL   =    $07             ;COLOR SPRITE B
ATFCOL   =    $08             ;FIELD COLOR
ATSCOL   =    $09             ;SCREEN COLOR
ATFCTL   =    $0A             ;FIELD DATA/MISSLE CONTROL
ATSALA   =    $10             ;SPRITE A HORIZ LATCH.
ATSBLA   =    $11
ATADAT   =    $1B             ;SPRITE A DATA.
ATBDAT   =    $1C             ;SPRITE B DATA
ATMVIN   =    $2A             ;ADDS INCR. TO SPRITE & MISSLE POS
ITIONS.
ATREMV   =    $2B             ;RESET ALL 5 INCREMENT REGS.
ATJBA    =    $3C             ;JOY BUTTON A.
JOYDAT   =    $280            ;JOYSTICKDATA (PORT A).ALSO PADDLE
 BUTTONS.
                              ;0=CLOSED  1=OPEN
*   JOYDAT BITMASKS-->
*-----------------------
JOYAUP   =    $10             ;A UP
JOYADN   =    $20             ;A DOWN
JOYALT   =    $40             ;A LEFT
JOYART   =    $80             ;A RIGHT
                              ;
                              ;
SWITCH   =    $282            ;PANEL SWITCHES (PORT B).
*   BIT MASKS FOR SWITCH-->
*-----------------------------
SWIRES   =    $01             ;GAME RESET
SWISEL   =    $02             ;GAME SELECT
SWICOL   =    $08             ;TV TYPE(0=BW, 1=COL)
SWIADF   =    $40             ;PLAYER A DIFFICULTY
SWIBDF   =    $80             ;         B
                              ;
*  6532 READ-ONLY REGS
```

```
     6532 READ ONLY REGS
*-------------------------
TIMER    =    $284        ;TIMER
TIME64   =    $296        ;TIMER/64.
```

```
********************************
* RAM DEFINITION & EQUATES     *
********************************
         PUT  MR.DO.EQU
*/MR.DO.EQU LAST EDIT:8/1/83
********************************
*                              *
*   *****      *     *   *     *
*   *   *     * *    ** **     *
*   *****    *****   * * *     *
*   **       *   *   *   *     *
*   * *      *   *   *   *     *
*   *  **    *   *   *   *     *
*                              *
********************************
*    GAME CONTROL RAM          *
*-------------------------------
GAME     =    $80        ;B0-B3 = GAME NUM.
ROUND    =    $81        ;B0-B3 = ROUND NUM.
                         ;
********************************
*          SCORE DATA          *
*-------------------------------
SCORLO   =    $82        ;LO 2 SCORE DIGITS.
SCORHI   =    $83        ;HI 2 SCORE DIGITS.
                         ;
FRAMEL   =    $84        ;FRAME COUNT LO.
FRAMEH   =    $85        ;FRAME COUNT HI.
                         ;
********************************
*         SOUND DATA           *
*-------------------------------
AIDX     =    $86        ;IDX TO CH A SOUND.
BIDX     =    $87        ;IDX TO CH B SOUND.
ADUR     =    $88        ;DURATION OF CH A SOUND.
                         ;ZERO  = GET NEXT NOTE.
                         ;MINUS = NO SOUND ON.
BDUR     =    $89        ;DURATION OF CH B SOUND.
                         ;
********************************
*    MISC.  STATUS  BYTES-->   *
********************************
DIGINV   =    $8A        ;NUM DIGGERS LEFT.
ALPHA    =    $8B        ;ALPHA MONSTER STATUS.
                         ;B0-B2=IDX FOR CHANNEL SELECT.
                         ;B3-B7=LETTER GOTTEN FLAGS.
CHERRYT  =    $8C        ;CHERRY TIMER/NOTE PTR.
                         ;B0-B4=TIMER SINCE LAST CHERRY EATEN.
                         ; (0=TIMER EXPIRED).
                         ;B5-B7=NOTE IDX FOR NEXT CHERRY EATEN SOUND.
                         ;
APFALL   =    $8D        ;APPLE FALLING IDX.
                         ;B7=1=NO APPLE FALLING.
                         ;B4-B6=WHICH APPLE IS FALLING.
                         ;B0-B3=STAGE TIMER.
ANIM8    =    $8E        ;ANIMATION FLAGS.
                         ;B7=MR DO BEING DRAGGED.
                         ;B6=DIG1 BEING DRAGGED.
                         ;B5=DIG2 BEING DRAGGED.
                         ;B1=ALF MONSTER OUT.
                         ;B0=MR DO IMG.FLIP/FLOP.
FCOLOR   =    $8F        ;FIELD (ORCHARD) COLOR.
********************************
```

```
*********************************
*       CHERRY DATA             *
*--------------------------------
                               ;8 BYTES ($90-$97).
CHERRYC    =     $90           ;CHERRY CONTROLS FOR 8 BANDS.
                               ;B0-B2 = CONTROL VALUE (REP/SPACIN
G).
                               ;B3-B6 = IDX TO CPOF TABLE.
                               ;B7 = NO CHERRY/SOME CHERRY FLAG.
                               ;
*********************************
*       ASYM FIELD DATA         *
*--------------------------------
                               ;32 BYTES ($98-$B7).
FR1L       =     $98           ;8 BANDS OF FR1 LEFT DATA.
FR2L       =     $A0           ;8 BANDS OF FR2 LEFT DATA.
FR2R       =     $A8           ;8 BANDS OF FR1 RIGHT DATA.
FR1R       =     $B0           ;8 BANDS OF FR2 RIGHT DATA.
                               ;
LASTJY     =     $B8           ;LAST LEGAL JOY (MR.DO. DIR).
                               ;
*********************************
*       MISSLE DATA             *
*--------------------------------
MISLN      =     $B9           ;MIS LINENUM.
MSBAND     =     $BA           ;MIS VERT POS.
                               ;B0-B3 = LN OFFSET.
                               ;B4-B6 = BAND NUM.
                               ;B7 = ON/OFF FLAG.
                               ;
MISPOF     =     $BB           ;MIS HORIZ POS.
                               ;B0-B6 = IDX TO POSTBL.
                               ;B7 = MIS AVAILABLE FLAG.
                               ;
MISDIR     =     $BC           ;MIS DIRECTION.
                               ;B0-B1 = MIS DIRECTION.
                               ;ALSO DOUBLES AS TIME
                               ;BEFORE PWRBALL AVAIL AGAIN.
                               ;
                               ;
*********************************
*   MR.DO & DIGGER DATA         *
*--------------------------------
DOBAND     =     $BD
DIGBAND    =     $BE           ;DIG VERT POS.
                               ;B0-B3 = LN OFFSET.
                               ;B4-B6 = BAND NUM.
                               ;B7= ON/OFF FLAG.
                               ;
DOPOF      =     $C0
DIGPOF     =     $C1           ;DIG HORIZ POS.
                               ;B0-B6 = IDX TO POSTBL.
                               ;
DODAT      =     $C3
DIGDAT     =     $C4           ;DIG DATA PTR.
                               ;
DIGDIR     =     $C6           ;DIG CONTROL.
                               ;B0-B1 = DIRECTION.
                               ;B7 = DIGGING FLAG.
DIGSPD     =     $C8           ;DIG SPEED.
                               ;(IDX TO SPDTBL)
                               ;B0= UP SPEED.
                               ;B1= DOWN SPEED.
                               ;B2= LEFT SPEED.
                               ;B3= RIGHT SPEED.
                               ;
```

```
DIGIQ     =     $CC          ;DIG INTELLIGENCE.
                             ;B0-B2=HOW MANY CCELLS TO GO
                             ;BEFORE TRYING NEW DIR.
MUX       =     $CE          ;NUMO TO 2 FOR MUX MGR.
                             ;
                             ;
*******************************
*      APPLE   RAM            *
*******************************
                             ;8 BYTES ($D0-$D7).
APBAND    =     $D0          ;APPLE POS.
                             ;B0-B3 = IMG TBL IDX.
                             ;B4-B6 = BAND NUM.
                             ;B7 = ON/GONE FLAG.
                             ;
APPOF     =     $D4          ;APPLE HORIZ POS.
                             ;B0-B6 = IDX TO POSTBL.
                             ;B7 = FALLING FLAG.
PWRTIM    =     $D8          ;IDX TO PTIME FOR WHEN BALL AVAIL
AGAIN.
MODE      =     $DA          ;GAME MODE.
RANDOM    =     $D9          ;FREE RUNNING RANDOM #.
DOINV     =     $DB          ;NUM MR DO'S LEFT.
                             ;
*******************************
*   TEMPORARY (SHARED) RAM    *
*-----------------------------
                             ;36 BYTES ($DC-$FF).
                             ;
*  RAM USED TO PAINT PLAYFIELD->
*******************************
PTR       =     $DC          ;SA IMG PAGE FLAGS FOR 8 BANDS.
                             ;
BAND      =     $DD          ;BAND NUM
                             ;
* SPRITE A (DIG,APPLE) DISPLAY RAM
*   ($DE-$EE)
********************************
LODATA    =     $DE          ;LO ADDRS SA (8 BANDS).
ADAT      =     $E5          ;LO ADDR FOR SA INDIRECT.
HIDATA    =     $E6          ;HI DATA ADDRS FOR SA.
                             ;$E7-$EE->
APOF      =     $E7          ;SA POFS.
                             ;
* SPRITE B (MR DO,CHERRY) DISPLAY RAM
*    ($EF-$FF)
*********************************
LODATB    =     $EF          ;LO ADDRS SB (8 BANDS).
BDAT      =     $F6          ;LO ADDR FOR SB INDIRECT.
HIDATB    =     $F7          ;HI DATA ADDR FOR SB.
                             ;$F8-$FF->
                             ;**********
BPOF      =     $F8          ;SB POF VALUES FOR 8 BANDS.
                             ;
                             ;
*  TEMP VERTICAL INTERVAL RAM
*---------------------------
TEMP14    =     $EA
TEMP15    =     $EB
TEMP11    =     $EC
TEMP12    =     $ED
TEMP13    =     $EE
TEMP1     =     $EF
TEMP2     =     $F0
TEMP3     =     $F1
TEMP4     =     $F2
```

```
TEMP4      =     $F2
TEMP5      =     $F3
TEMP6      =     $F4
TEMP7      =     $F5
TEMP8      =     $F6
TEMP9      =     $F7
TEMP10     =     $F8
                                ;
* RAM FOR DISPLAYING 6 SPRITES->
* NOTE-THIS RAM PLUS TEMP1,2,3 DOES
* NOT CONFLICT WITH SA DISPLAY RAM.
*********************************
PD100K     =     $F2
PD10K      =     $F4
PD1K       =     $F6
PD100      =     $F8
PD10       =     $FA
PD1        =     $FC
                                ;
```

```
********************************
*                              *
*   *****    *****     *    *  *
*   *        *   *     *    *  *
*   ***      *   *     *    *  *
*   *        *   *     *    *  *
*   *        *   **    *    *  *
*   *****    ***** *   ******  *
*                              *
********************************
*      COLOR   EQUATES         *
*------------------------------*
                         ;
BLACK    =    0
WHITE    =    $0E
RED      =    $22
YELLOW   =    $1A
GREEN    =    $D6
ORANGE   =    $28
BLUE     =    $9A
PURPLE   =    $68
BROWN    =    $12
GOLD     =    $16
LBLUE    =    $96
                         ;
SCRCOL   =    BLACK      ;BKGND COLOR OF ORCHARDS.
                         ;
********************************
*  DIRECTION EQUATES ->        *
*-------------------------------
* STARTING IDXS FOR EACH DIR IN DIRTBL->
UPI      =    0
DOWNI    =    4
RIGHTI   =    8
LEFTI    =    12
                         ;
* DIRECTION VALUES-->
UPD      =    0
DOWND    =    1
RIGHTD   =    2
LEFTD    =    3
                         ;
********************************
*    GAME MODES-->             *
********************************
RESUM    =    $80        ;RESUME PLAY MODE(1 SEC BLACK).
XTRADO   =    $70        ;EXTRA MR.DO.WON.
TRACK    =    $50        ;ALT CPMD+ ORCH.
GAMOVR   =    $40
SELECT   =    $30        ;SELECT MODE.
DODEAD   =    $20
PLAY     =    $10
                         ;
********************************
*  VERT INTERVAL TIMER EQUATES *
*-------------------------------
TOPTIM   =    $A9        ;TOPVI TIMER VALUE.
MIDTIM   =    $AD        ;TIME TO PAINT SCORE,EXTRA + SET R
AM UP.
                         ;
BOTTIM   =    $9F        ;BOTVI TIMER VALUE.
         PUT  MR.DO.SOUND EQUATES
*/ SOUND EQUATES LASTED 7/8/83
                         ;
* OFFSETS FROM SNDTBL-->
```

```
        ********************************
        DEADSND   =     0
        BEEP      =     8
        BOOP      =     $0E
        BELLS     =     $14
                                        ;CHERRY NOTES->
        CHER1     =     $1C
        CHER2     =     $29
        CHER3     =     $36
        CHER4     =     $43
        CHER5     =     $50
        CHER6     =     $5D
                                        ;
        * OFFSETS FROM AMUSFW (MUSIC)->
        ********************************
        SONG1     =     0               ;ORCHARD SONG.
        SONG2     =     $31             ;END SONG.
        SONG3     =     $51             ;DO DEAD SONG.
                                        ;
                  ORG   BEGORG-4
1FFC: 00 20       DA    BEGORG
1FFE: FE 2F       DA    END
```

```
                  *********************************
                  * POWERUP INITIALIZATION        *
                  *********************************
                               PUT   MR.DO.INIT
                  */ MR.DO.INIT    LASTED:7/27/83.
                  *
                  * BANK SWITCH TO 2ND BANK->
                  *********************************
                  TOPSW
2000: AD F9 FF                 LDA   $FFF9
2003: 4C 12 30                 JMP   TOP2            ;CONT.W/TOPVI.
                  * COME HERE FROM BANK 2-->
                  *********************************
2006: EA                       NOP
2007: EA                       NOP
2008: EA                       NOP
2009: EA                       NOP
200A: 4C 2E 20                 JMP   BOTVI
200D: EA                       NOP
200E: EA                       NOP
200F: EA                       NOP
2010: EA                       NOP
2011: EA                       NOP
                                                     ;
                  * ENTER HERE FOR BANK2 POWERUP->
                  *********************************
                  PWRUP
2012: 78                       SEI
2013: D8                       CLD
2014: A2 00                    LDX   #0
2016: 8A                       TXA
2017: 95 00       CLRAM        STA   0,X
2019: 9A                       TXS
201A: E8                       INX
201B: D0 FA                    BNE   CLRAM
                  *
                  * GO INIT CHERRY,FIELD MAP,MUGS,APPLES,ETC-->
                  **********************************************
                                                     ;ROUND=0
201D: 20 A9 29                 JSR   IROUND
                                                     ;NO SONG->
                                                     ;
2020: A9 30                    LDA   #SELECT         ;TRACK MODE
2022: 85 DA                    STA   MODE            ;GAME NUM=0
                                                     ;
2024: A9 FF                    LDA   #$FF
2026: 85 88                    STA   ADUR
2028: 85 89                    STA   BDUR            ;NO SND.
                                                     ;
202A: A9 31                    LDA   #$31            ;8X MIS.
202C: 85 0A                    STA   ATFCTL          ;MIRROR.
                                                     ;
                                                     ;
```

```
                 *********************************
                 * BOTTOM VERTICAL INTERVAL      *
                 *********************************
                          PUT  MR.DO.BOTVI
                 */ MR.DO.BOTVI LASTED: 8/3/83
                 *********************************
                 *  BOTTOM VERTICAL INTERVAL     *
                 *********************************
                 BOTVI
202E: A9 9F               LDA  #BOTTIM
2030: 85 02               STA  ATWAIT
2032: 8D 96 02            STA  TIME64     ;INIT TIMER.
2035: A5 DA               LDA  MODE
2037: C9 10               CMP  #PLAY
2039: F0 03               BEQ  PMODE
                                          ;
                 *SKIP MOST BOTVI IF NOT PLAY MODE
                 *********************************
203B: 4C 3C 23            JMP  ENDBOT
                                          ;
                 * ARE ALL DIGGERS DEAD???
                 *********************************
                 PMODE
203E: A9 F8               LDA  #$F8
2040: 25 8B               AND  ALPHA
2042: C9 F8               CMP  #$F8       ;ALL LETTERS HAD?
2044: F0 0C               BEQ  EATTST     ;J Y.(SKIP DIGS DEAD TEST)
                                          ;
2046: A5 BE               LDA  DIGBAND
2048: 10 08               BPL  EATTST
204A: A5 BF               LDA  DIGBAND+1
204C: 10 04               BPL  EATTST
                                          ;BOTH DIGS ARE OFF->
204E: A5 8A               LDA  DIGINV     ;ANY DIGS LEFT?
2050: F0 0D               BEQ  NEWRND     ;J N.
                                          ;
                 *********************************
                 * TEST IF ALL CHERRIES ARE GONE*
                 *********************************
                 EATTST
2052: A5 89               LDA  BDUR
2054: 10 19               BPL  SOMLFT     ;JP SONG ON.
2056: A2 07               LDX  #7
                 ALGONE
2058: B5 90               LDA  CHERRYC,X
205A: 30 13               BMI  SOMLFT     ;JP SOME CHERRY LEFT.
205C: CA                  DEX
205D: 10 F9               BPL  ALGONE
                                          ;ELSE ALL CHERRIES GONE.
```

```
                * PREPARE TO START NEW ROUND->
                ******************************
                NEWRND
205F: A9 80              LDA  #RESUM
2061: 85 DA              STA  MODE
                                        ;PLAY ROUND OVER SONG->
2063: A9 00              LDA  #SONG1
2065: 20 2C 2D           JSR  SONG
                                        ;
2068: A9 D8              LDA  #$D8      ;SHORT DELAY BETWEEN
206A: 85 84              STA  FRAMEL    ;SCREENS.
206C: 4C 3C 23           JMP  ENDBOT
                SOMLFT
```

```
                                                 ;
                 * MR. DO  V. DIG HIT TEST->     *
                 ********************************
206F: A5 BD                LDA  DOBAND
2071: 4A                   LSR
2072: 4A                   LSR
2073: 4A                   LSR
2074: 4A                   LSR
2075: 85 EF                STA  TEMP1       ;SV DO BAND.
2077: A2 01                LDX  #1          ;TRY BOTH DIGGERS->
                 HIT2
2079: B5 BE                LDA  DIGBAND,X
207B: 30 15                BMI  NXTTRY      ;JP DIG IS OFF.
207D: 4A                   LSR
207E: 4A                   LSR
207F: 4A                   LSR
2080: 4A                   LSR
2081: C5 EF                CMP  TEMP1       ;ON SAME BAND?
2083: D0 0D                BNE  NXTTRY      ;JP NO.
                                            ;
                                            ;
                 *  DO RANGE TEST FOR HORIZ POS->
                 ********************************
2085: 38                   SEC
2086: A5 C0                LDA  DOPOF
2088: F5 C1                SBC  DIGPOF,X
208A: C9 02                CMP  #2
208C: 90 17                BCC  MDOHIT
208E: C9 FE                CMP  #$FE
2090: B0 13                BCS  MDOHIT
                 NXTTRY
2092: CA                   DEX
2093: 10 E4                BPL  HIT2        ;TRY OTHER DIGGER.
2095: 4C C0 20             JMP  NOHIT       ;ELSE TRIED BOTH.
                 * ADD DIGS BACK TO INVENTORY->
                 ********************************
                 INCINV
2098: A5 BE                LDA  DIGBAND
209A: 30 02                BMI  II5
209C: E6 8A                INC  DIGINV
                 II5
209E: A5 BF                LDA  DIGBAND+1
20A0: 30 02                BMI  II9
20A2: E6 8A                INC  DIGINV
                 II9
20A4: 60                   RTS
                                            ;
```

```
                * MR DO IS HIT BY A DIGGER-->
                *******************************
                MDOHIT
20A5: A9 20                  LDA   #DODEAD
20A7: 85 DA                  STA   MODE
                                                  ;
                NOMORE
20A9: A9 51                  LDA   #SONG3
20AB: 20 2C 2D               JSR   SONG           ;PLAY DEAD SONG.
20AE: 20 98 20               JSR   INCINV         ;ADD DIGS BACK.
                                                  ;
20B1: A9 00                  LDA   #0
20B3: 85 84                  STA   FRAMEL
20B5: A9 04                  LDA   #4
20B7: 85 BC                  STA   MISDIR         ;BRIEF DELAY.
20B9: A9 FF                  LDA   #$FF
20BB: 85 BA                  STA   MSBAND         ;BALL IS UNAVAIL.
20BD: 4C 3C 23               JMP   ENDBOT
                NOHIT
                                                  ;
```

```
                ********************************
                * FIELD HIT DETECT
                * REMOVE BIT IN FLD MAP WHERE MOST OF MR DO IS-->
                * ALSO WHERE DIGGERS ARE.
                ********************************
20C0: A5 BD              LDA  DOBAND
20C2: A6 C0              LDX  DOPOF
20C4: 20 B6 2D           JSR  FMRMV      ;RMV BITS IN FIELD MAP.
                                         ;
                *  REMOVE FIELD WHERE DIGGERS ARE
                ********************************
20C7: A0 01              LDY  #1
                FLDOUT
20C9: B9 CA 00           LDA  DIGTIM,Y   ;DIGGING?
20CC: 10 0A              BPL  FMAP2      ;J N.
20CE: B9 BE 00           LDA  DIGBAND,Y
20D1: 30 05              BMI  FMAP2      ;J DIG OFF.
20D3: B6 C1              LDX  DIGPOF,Y
20D5: 20 B6 2D           JSR  FMRMV      ;RMV FIELD.
                FMAP2
20D8: 88                 DEY
20D9: 10 EE              BPL  FLDOUT     ;DO BOTH.
```

```
                 **********************************
                 * MOVE BADGUYS-CHASE MR.DO-->  *
                 **********************************
20DB: A5 89                   LDA  BDUR
20DD: 30 05                   BMI  MVCHK      ;JP MUSIC NOT ON.
20DF: 4C 3C 23                JMP  ENDBOT
                                              ;
                 * MASKS FOR DIGS BEING DRAGGED.
                 DRAGTB
20E2: 40 20                   DFB  $40,$20
                 **********************************
                 * A BADGUY/DIGGER ALWAYS CONTINUES MOVING IN A DIRECTION
                 * UNTIL HE'S IN A CHAR CELL. THIS MEANS WHEN HE HAS TO
                 * DECIDE WHICH DIRECTION TO MOVE NEXT, HE ALWAYS
                 * HAS ALL 4 DIRECTIONS TO CHOOSE
                 **********************************
                 MVCHK
20E4: A5 DA                   LDA  MODE
20E6: C9 10                   CMP  #PLAY
20E8: F0 03                   BEQ  MVC1       ;J PLAY MODE.
                 NMOV
20EA: 4C 3C 23                JMP  ENDBOT     ;ELSE DON'T MOVE DIGS.
                 MVC1
20ED: A5 84                   LDA  FRAMEL
20EF: 29 01                   AND  #1
20F1: AA                      TAX             ;X=WHICH DIG TO MOV.
20F2: E8                      INX             ;MAKE 1 OR 2.
20F3: BD E1 20                LDA  DRAGTB-1,X ;GET DRAG BIT MASK.
20F6: 25 8E                   AND  ANIM8      ;BEING DRAGGED?
20F8: D0 F0                   BNE  NMOV       ;ELSE HE CAN'T MOVE.
20FA: B5 BD                   LDA  DOBAND,X   ;GET DIGBAND.
20FC: 30 EC                   BMI  NMOV       ;J IF OFF
20FE: B5 C0                   LDA  DOPOF,X    ;GET DIGPOF.
2100: 29 07                   AND  #7
2102: D0 09                   BNE  KEEPMV     ;JP NOT ON A COL,KEEP MOVING IN LA
ST DIR.
                                              ;
                 * DIGGER IS ON A COLUMN-->
                 **********************************
2104: B5 BD                   LDA  DOBAND,X
2106: 29 0F                   AND  #$0F
2108: D0 03                   BNE  KEEPMV     ;JP NOT W/I A BAND TOO.
210A: 4C A8 21                JMP  NEWMOV
```

```
                    *KEEP DIGGER MOVING IN SAME DIR->
                    * BECAUSE HE'S NOT IN A CC YET.
                    ********************************
                    KEEPMV
210D: B5 C5                   LDA   DIGDIR-1,X
210F: 29 03                   AND   #3           ;KEEP ONLY DIR BITS.
2111: C9 00                   CMP   #UPD
2113: D0 24                   BNE   KM5          ;JP NOT UP.
                    *  MOVE HIM UP-->
                    ********************************
2115: B4 C7                   LDY   DIGSPD-1,X
2117: B9 95 2F                LDA   SPDTBL,Y
211A: 29 01                   AND   #1
211C: 85 F5                   STA   TEMP7        ;UP SPD.
                    MVU2
211E: 20 F7 2B                JSR   MUP          ;MOVE HIM UP.
                                                 ;USED T1.
2121: 90 03                   BCC   MVU3
2123: 4C C0 21                JMP   ABORT        ;J CAN'T MV.
                    MVU3
2126: B5 BD                   LDA   DOBAND,X
2128: 29 0F                   AND   #$0F
212A: F0 0A                   BEQ   ENDMV        ;IF IN CC DON'T MV AGAIN.
212C: C6 F5                   DEC   TEMP7
212E: 30 06                   BMI   ENDMV
2130: A5 D9                   LDA   RANDOM
2132: 29 02                   AND   #2
2134: F0 E8                   BEQ   MVU2         ;MV AGAIN.
                    ENDMV
2136: 4C 3C 23                JMP   ENDBOT
                    KM5
2139: C9 01                   CMP   #DOWND
213B: D0 21                   BNE   KM7          ;JP NOT DOWN.
                    *  MOVE HIM DOWN-->
                    ********************************
213D: B4 C7                   LDY   DIGSPD-1,X
213F: B9 95 2F                LDA   SPDTBL,Y
2142: 29 02                   AND   #2
2144: 4A                      LSR
2145: 85 F5                   STA   TEMP7        ;DOWN SPD.
                    MVD2
2147: 20 AF 2B                JSR   MDOWN        ;MOV HIM DOWN.
                                                 ;USED T1.
214A: B0 74                   BCS   ABORT        ;J CAN'T MOV.
214C: B5 BD                   LDA   DOBAND,X
214E: 29 0F                   AND   #$0F
2150: F0 E4                   BEQ   ENDMV        ;DON'T MV AGAIN IF IN CC.
2152: C6 F5                   DEC   TEMP7
2154: 30 E0                   BMI   ENDMV
2156: A9 02                   LDA   #2
2158: 25 D9                   AND   RANDOM
215A: F0 EB                   BEQ   MVD2         ;MOVE AGAIN
215C: D0 D8                   BNE   ENDMV
                                                 ;
                    KM7
215E: C9 03                   CMP   #LEFTD
2160: D0 22                   BNE   KMRT         ;JP NOT LEFT.
                    *  MOVE HIM LEFT-->
                    ********************************
                    KMLFT
2162: B4 C7                   LDY   DIGSPD-1,X
2164: B9 95 2F                LDA   SPDTBL,Y
2167: 29 04                   AND   #4
2169: 4A                      LSR
216A: 4A                      LSR
```

```
216B: 85 F5             STA   TEMP7        ;LFT SPD.
               KML2
216D: 20 A6 2C          JSR   MLEFT        ;MOVE HIM LEFT.
                                           ;USED T1,T2,T3,T4.
2170: B0 4E             BCS   ABORT        ;J CAN'T MOV.
2172: B5 C0             LDA   DOPOF,X
2174: 29 07             AND   #7
2176: F0 BE             BEQ   ENDMV        ;DON'T MV AGAIN IF IN CC.
2178: C6 F5             DEC   TEMP7
217A: 30 BA             BMI   ENDMV
217C: A9 02             LDA   #2
217E: 25 D9             AND   RANDOM
2180: F0 EB             BEQ   KML2         ;MV AGAIN.
2182: D0 B2             BNE   ENDMV
                                           ;
               *  MOVE HIM RIGHT-->
               ********************************
               KMRT
2184: B4 C7             LDY   DIGSPD-1,X
2186: B9 95 2F          LDA   SPDTBL,Y
2189: 29 08             AND   #8
218B: 4A                LSR
218C: 4A                LSR
218D: 4A                LSR
218E: 85 F5             STA   TEMP7        ;RT. SPD.
               KMRT2
2190: 20 3D 2C          JSR   MRIGHT       ;MOVE HIM RIGHT.
                                           ;USED T1,T2,T3,T4.
2193: B0 2B             BCS   ABORT        ;J CAN'T MV.
2195: B5 C0             LDA   DOPOF,X
2197: 29 07             AND   #7
2199: F0 0A             BEQ   EMV          ;DON'T MV AGAIN IF IN CC.
                                           ;
219B: C6 F5             DEC   TEMP7
219D: 30 06             BMI   EMV
219F: A9 02             LDA   #2
21A1: 25 D9             AND   RANDOM
21A3: F0 EB             BEQ   KMRT2        ;MV AGAIN
               EMV
21A5: 4C 3C 23          JMP   ENDBOT
```

```
                  *********************************
                  * DIGGER IS BOTH ON A COL + IN A BAND.
                  * (IF DIGIQ = NZ TRY TO KP GOING>
                  *********************************
                  NEWMOV
21A8: A9 03                LDA   #3
21AA: 85 F3                STA   TEMP5       ;INIT # DIR TO TRY.
                                             ;
21AC: B5 CB                LDA   DIGIQ-1,X
21AE: F0 33                BEQ   NEWDIR
21B0: D6 CB                DEC   DIGIQ-1,X
                                             ;
                  * IF H/V POS=DO H/V POS THEN ABANDON CCELL RULE.
                  *********************************
21B2: A5 BD                LDA   DOBAND
21B4: 29 70                AND   #$70
21B6: D5 BD                CMP   DOBAND,X
21B8: F0 06                BEQ   ABORT
                                             ;
21BA: A5 C0                LDA   DOPOF
21BC: D5 C0                CMP   DOPOF,X
21BE: D0 07                BNE   SAME1
                                             ;
                  ABORT
21C0: A9 00                LDA   #0          ;
21C2: 95 CB                STA   DIGIQ-1,X
21C4: 4C E3 21             JMP   NEWDIR
                                             ;
```

```
                 *  TRY TO CONTINUE IN SAME DIR->
                 *******************************
                 SAME1
21C7: B5 C5               LDA  DIGDIR-1,X
21C9: 29 03               AND  #3
21CB: C9 00               CMP  #UPD
21CD: D0 03               BNE  NM1
                                           ;RANDOM 2ND TRY AFT UP.
21CF: 4C 23 22            JMP  RNDUP
                 NM1
21D2: C9 01               CMP  #DOWND
21D4: D0 03               BNE  NM2
                                           ;RANDOM 2ND TRY AFT DOWN.
21D6: 4C F1 21            JMP  RNDDWN
                 NM2
21D9: C9 03               CMP  #LEFTD
21DB: D0 03               BNE  NM3
                                           ;RANDOM 2ND TRY AFT LEFT.
21DD: 4C 4F 22            JMP  RNDLFT
                 NM3
                                           ;RND 2ND TRY AFT RIGHT.
21E0: 4C 35 22            JMP  RNDRT
                                           ;
```

```
                 * FIGURE WHICH DIR TBL TO USE-->
                 ********************************
                 NEWDIR
21E3: A5 BD               LDA   DOBAND
21E5: 29 70               AND   #$70        ;KP BAND.
21E7: D5 BD               CMP   DOBAND,X
21E9: B0 30               BCS   DIR25       ;JP MR DO ABOVE OR EQ TO DIG.
                                            ;
                 ********************************
                 *  MR DO IS BELOW THIS DIGGER-->
                 ********************************
21EB: A5 C0               LDA   DOPOF
21ED: D5 C0               CMP   DOPOF,X
21EF: D0 10               BNE   BELOW1
                                            ;RANDOM HOR TRY AFT VERT.
                 RNDDWN
21F1: A0 12               LDY   #DLRU-DIRTBL
21F3: A9 10               LDA   #$10
21F5: 25 D9               AND   RANDOM
21F7: D0 03               BNE   BELOW0
21F9: 4C 63 22            JMP   HAVDIR
                 BELOW0
                                            ;DRLU.
21FC: A0 0C               LDY   #DRLU-DIRTBL
21FE: 4C 63 22            JMP   HAVDIR
                 BELOW1
2201: 90 0C               BCC   BLOL        ;JP MR DO IS TO LEFT.
                                            ;
                 * MR DO IS BELOW TO RIGHT->
                 ********************************
2203: A0 0C               LDY   #DRLU-DIRTBL
2205: 20 F7 22            JSR   HORV        ;WHICH DISTANCE IS GREATER?
                                            ;H-V=
2208: B0 59               BCS   HAVDIR      ;CHOOSE SHORTEST DISTANCE.
220A: A0 08               LDY   #RDUL-DIRTBL
220C: 4C 63 22            JMP   HAVDIR      ;JP IF ON SAME BAND.
```

```
                   * MR DO IS BELOW TO LEFT->
                   *******************************
                   BLOL
220F: A0 12                    LDY  #DLRU-DIRTBL
2211: 20 F7 22                 JSR  HORV          ;H-V=
                                                  ;USED T7,T8.
2214: B0 4D                    BCS  HAVDIR        ;CHOOSE SHORTEST DISTANCE.
2216: A0 02                    LDY  #LDUR-DIRTBL
2218: 4C 63 22                 JMP  HAVDIR
                                                  ;
                   *******************************
                   * MR DO IS ABOVE OR EQ TO DIG->
                   *******************************
                   DIR25
221B: 08                       PHP                ;SV BAND CMP STAT.
221C: A5 C0                    LDA  DOPOF
221E: D5 C0                    CMP  DOPOF,X
2220: D0 0E                    BNE  ABOVE1
                                                  ;
                   *  SAME POS---FORCE VERT MOVE->
                   *******************************
2222: 28                       PLP                ;FIX SP
                                                  ;RANDOM HOR TRY AFT VERT->
                   RNDUP
2223: A0 06                    LDY  #ULRD-DIRTBL
2225: A9 08                    LDA  #8
2227: 25 D9                    AND  RANDOM
2229: D0 02                    BNE  ABOVE0
                                                  ;URLD.
222B: A0 00                    LDY  #URLD-DIRTBL
                   ABOVE0
222D: 4C 63 22                 JMP  HAVDIR
                   ABOVE1
2230: 90 1A                    BCC  ABVL          ;JP MR DO IS TO LEFT.
                   * MR DO IS ABOVE TO RIGHT->
                   *******************************
2232: 28                       PLP
2233: D0 0B                    BNE  ABOVE3        ;J N ON SAME BANDS.
                                                  ;RANDOM VERT AFT HOR->
                   RNDRT
2235: A0 08                    LDY  #RDUL-DIRTBL
2237: A9 04                    LDA  #4
2239: 25 D9                    AND  RANDOM
223B: D0 0A                    BNE  ABOVE2
223D: 4C 63 22                 JMP  HAVDIR
                   ABOVE3
2240: A0 00                    LDY  #URLD-DIRTBL
2242: 20 F7 22                 JSR  HORV          ;H-V=
                                                  ;USED T7,T8.
2245: B0 1C                    BCS  HAVDIR        ;CHOOSE SHORTEST DIR.
                   ABOVE2
                                                  ;RUDL
2247: A0 14                    LDY  #RUDL-DIRTBL
2249: 4C 63 22                 JMP  HAVDIR
                                                  ;
                   * MR DO IS ABOVE TO LEFT->
                   *******************************
                   ABVL
224C: 28                       PLP
224D: D0 0B                    BNE  ABOVE6        ;J N ON SAME BANDS.
                                                  ;RANDOM VERT AFT TRY HORIZ->
                   RNDLFT
224F: A9 10                    LDA  #$10
2251: 25 D9                    AND  RANDOM
2253: D0 0C                    BNE  ABOVE7
```

```
2255: A0 02                 LDY  #LDUR-DIRTBL
2257: 4C 63 22              JMP  HAVDIR
                                            ;
                                            ;
                  ABOVE6
225A: A0 06                 LDY  #ULRD-DIRTBL
225C: 20 F7 22              JSR  HORV       ;H-V=
                                            ;USED T7,T8.
225F: B0 02                 BCS  HAVDIR     ;CHOOSE SHORTEST DISTANCE.
                  ABOVE7
                                            ;LUDR
2261: A0 0E                 LDY  #LUDR-DIRTBL
                                            ;
                  HAVDIR
2263: 84 F4                 STY  TEMP6      ;SV PTR TO DIRTBL.
2265: 4C CD 22              JMP  SEARCH     ;START SEARCH.
```

```
                   ********************************
                   *  TRY TO MOVE BADGUY RIGHT-->
                   ********************************
                   MDRT
2268: B5 C0                 LDA  DOPOF,X
226A: 18                    CLC
226B: 69 08                 ADC  #8          ;TEST POS+8.
226D: A8                    TAY
226E: B5 BD                 LDA  DOBAND,X
2270: 20 79 2D              JSR  CCTST       ;SEE IF FIELD ON THERE.
                                             ;USED T1-T4.
2273: F0 03                 BEQ  MDRT2
2275: 4C C7 22              JMP  NOGOOD      ;JP IF ON.
                   MDRT2
2278: 20 3D 2C              JSR  MRIGHT      ;TRY RT.
                                             ;USED T1-T3.
227B: 90 03                 BCC  MDRT4       ;JP IF COULD GO LEFT.
227D: 4C C7 22              JMP  NOGOOD
                   MDRT4
2280: A9 02                 LDA  #RIGHTD     ;NEW DIR.
2282: 4C E4 22              JMP  DIDMOV
                                             ;
```

```
                **********************************
                *  TRY TO MOVE BADGUY LEFT-->
                **********************************
                MDLT
2285: B5 BD                  LDA  DOBAND,X
2287: B4 C0                  LDY  DOPOF,X
2289: F0 3C                  BEQ  NOGOOD      ;JP IF AT EDGE.
228B: 88                     DEY              ;POS-1.
228C: 20 79 2D               JSR  CCTST       ;FLD ON?
                                              ;USED T1-T4.
228F: D0 36                  BNE  NOGOOD      ;JP YES(NOT MOWED).
2291: 20 A6 2C               JSR  MLEFT       ;TRY LT.
                                              ;USED T1-T4.
2294: B0 31                  BCS  NOGOOD
2296: A9 03                  LDA  #LEFTD      ;NEW DIR.
2298: 4C E4 22               JMP  DIDMOV
                                              ;
```

```
                 ******************************
                 *  TRY TO MOVE BADGUY DOWN-->
                 ********************************
                 MDDN
229B: B5 BD                 LDA   DOBAND,X
229D: B4 C0                 LDY   DOPOF,X
                                               ;TEST IF FLD MOWED BELOW DIG->
229F: 38                    SEC
22A0: E9 10                 SBC   #$10         ;BAND-1.
22A2: 20 79 2D              JSR   CCTST
                                               ;USED T1-T4.
22A5: D0 20                 BNE   NOGOOD
                                               ;
22A7: 20 AF 2B              JSR   MDOWN        ;TRY DN.
                                               ;USED T1.
22AA: B0 1B                 BCS   NOGOOD
22AC: A9 01                 LDA   #DOWND       ;NEW DIR.
22AE: 4C E4 22              JMP   DIDMOV
```

```
                     *******************************
                     *  TRY TO MOVE BADGUY UP-->
                     *******************************
                     MDUP
22B1: B5 BD                   LDA   DOBAND,X
22B3: B4 C0                   LDY   DOPOF,X
22B5: 18                      CLC
22B6: 69 10                   ADC   #$10        ;BAND+1.
22B8: 20 79 2D                JSR   CCTST       ;MOVED?
                                                ;USED T1-T4.
22BB: D0 0A                   BNE   NOGOOD      ;JP NO.
                                                ;
22BD: 20 F7 2B                JSR   MUP         ;TRY TO MOVE UP.
                                                ;USED T1.
22C0: B0 05                   BCS   NOGOOD
                                                ;
22C2: A9 00                   LDA   #UPD        ;NEW DIR.
22C4: 4C E4 22                JMP   DIDMOV
```

```
                ********************************
                * LAST MOVE TRIED WAS NOT LEGAL.
                *  TRY SOMETHING ELSE-->
                ********************************
                NOGOOD
22C7: C6 F3                   DEC   TEMP5
22C9: 30 29                   BMI   NG99        ;JP IF TRIED ALL 4 DIRECTIONS.
22CB: E6 F4                   INC   TEMP6       ;UP DIRTBL IDX.
                SEARCH
22CD: A4 F4                   LDY   TEMP6       ;GET DIR-TO-TRY-NEXT IDX.
22CF: B9 24 23                LDA   DIRTBL,Y
22D2: C9 00                   CMP   #UPD
22D4: F0 DB                   BEQ   MDUP        ;JP IF UP.
22D6: C9 01                   CMP   #DOWND
22D8: F0 C1                   BEQ   MDDN        ;JP IF DOWN.
22DA: C9 03                   CMP   #LEFTD
22DC: F0 03                   BEQ   MDLTJP      JP IF LEFT.
22DE: 4C 68 22                JMP   MDRT        ;ELSE MUST BE RIGHT.
                MDLTJP
22E1: 4C 85 22                JMP   MDLT
                                                ;
                *  THE NEW MOVE HAS BEEN MADE
                ********************************
                DIDMOV
22E4: 95 C5                   STA   DIGDIR-1,X  ;SV NEW DIR.
22E6: A5 F3                   LDA   TEMP5
22E8: C9 03                   CMP   #3          ;WAS IT FIRST TRY?
22EA: F0 08                   BEQ   NG99        ;J Y.
22EC: A5 D9                   LDA   RANDOM
22EE: 29 0F                   AND   #$0F
22F0: 69 01                   ADC   #1          ;MAKE NZ.
22F2: 95 CB                   STA   DIGIQ-1,X   ;REINIT IQ.
                NG99
22F4: 4C 3C 23                JMP   ENDBOT      ;JP DONE ALL BADGUYS/DIGGERS.
                                                ;
```

```
                * WHICH DISTANCE IS GREATER H/V?
                *******************************
                HORV
22F7: A5 BD                 LDA  DOBAND
22F9: 29 70                 AND  #$70
22FB: 38                    SEC
22FC: F5 BD                 SBC  DOBAND,X
22FE: 10 05                 BPL  NOBOR      ;J PLUS RESULT.
2300: 49 FF                 EOR  #$FF       ;MAKE PLUS.
2302: 18                    CLC
2303: 69 01                 ADC  #1
                NOBOR
2305: 4A                    LSR
2306: 4A                    LSR
2307: 4A                    LSR
2308: 4A                    LSR
2309: 85 F5                 STA  TEMP7      ;SV V DIF.
                                            ;
230B: A5 C0                 LDA  DOPOF
230D: 4A                    LSR
230E: 4A                    LSR
230F: 4A                    LSR             ; /8.
2310: 85 F6                 STA  TEMP8
2312: B5 C0                 LDA  DOPOF,X
2314: 4A                    LSR
2315: 4A                    LSR
2316: 4A                    LSR             ; /8.
2317: 38                    SEC
2318: E5 F6                 SBC  TEMP8      ;DIGPOF-DOPOF.
231A: 10 05                 BPL  NOBOR2
231C: 49 FF                 EOR  #$FF
231E: 18                    CLC
231F: 69 01                 ADC  #1
                NOBOR2
2321: C5 F5                 CMP  TEMP7
2323: 60                    RTS
                                            ;
                * NEXT DIRECTION TO TRY TABLE-->
                ********************************
                DIRTBL
                URLD
2324: 00 02                 DFB  UPD,RIGHTD
                LDUR
2326: 03 01 00
2329: 02                    DFB  LEFTD,DOWND,UPD,RIGHTD
                ULRD
232A: 00 03                 DFB  UPD,LEFTD
                RDUL
232C: 02 01 00
232F: 03                    DFB  RIGHTD,DOWND,UPD,LEFTD
                DRLU
2330: 01 02                 DFB  DOWND,RIGHTD
                LUDR
2332: 03 00 01
2335: 02                    DFB  LEFTD,UPD,DOWND,RIGHTD
                DLRU
2336: 01 03                 DFB  DOWND,LEFTD
                RUDL
2338: 02 00 01
233B: 03                    DFB  RIGHTD,UPD,DOWND,LEFTD
                ENDBOT
```

```
                ********************************
                * APPLE CONTROL CODE           *
                ********************************
                         PUT   MR.DO.APPLE
                */ MR.DO.APPLE LASTED 8/3/83.
                                            ;
                *  APPLE FALLING TEST-->
                ********************************
                APPLE
233C: A5 8D              LDA   APFALL
233E: 10 3B              BPL   FALLMON      ;JP IF AN APPLE IS FALLING.
2340: A5 84              LDA   FRAMEL       ;TEST IF 1 CAN FALL.
2342: 29 03              AND   #3
2344: AA                 TAX                ;ONLY TEST 1 PER FRAME.
2345: B5 D0              LDA   APBAND,X
2347: 30 1B              BMI   NF9          ;JP APPLE NOT ON.
2349: 29 70              AND   #$70
234B: F0 17              BEQ   NF9          ;JP SITTING IN BOTTOM BAND.
                * TEST IF FIELD ON UNDER APPLE->
                ********************************
234D: B5 D4              LDA   APPOF,X
234F: 29 07              AND   #7           ;ON COLUMN?
2351: C9 04              CMP   #4           ;SHOULD WE LOOK IN COLUMN TO RT.
2353: B5 D4              LDA   APPOF,X
2355: 90 02              BCC   NF5          ;JP NO.
2357: 69 07              ADC   #7
                NF5
2359: A8                 TAY                ;Y=POS TO CHK.
235A: B5 D0              LDA   APBAND,X
235C: 38                 SEC
235D: E9 10              SBC   #$10         ;BAND-1.
235F: 20 89 2D           JSR   CCTEST
2362: F0 03              BEQ   STFALL       ;JP FLD OFF.
                NF9
2364: 4C D7 24           JMP   FALL99       ;JP CAN'T FALL.
                                            ;
                * START APPLE FALLING-->
                ********************************
                STFALL
2367: 8A                 TXA                ;GET WHICH APPLE.
2368: 0A                 ASL
2369: 0A                 ASL
236A: 0A                 ASL
236B: 0A                 ASL
236C: 09 0F              ORA   #$0F         ;SET TIMER.
236E: 85 8D              STA   APFALL
                                            ;START ROCKING IMG->
2370: B5 D0              LDA   APBAND,X
2372: 29 F0              AND   #$F0
2374: 09 01              ORA   #1           ;IMG IDX = 1.
2376: 95 D0              STA   APBAND,X
2378: 4C D7 24           JMP   FALL99
```

```
                * AN APPLE IS ALREADY FALLING-->
                ********************************
                FALLMON
237B: 4A                LSR
237C: 4A                LSR
237D: 4A                LSR
237E: 4A                LSR
237F: AA                TAX                 ;X=WHICH AP IS FALLING.
2380: C6 8D             DEC   APFALL        ;DEC TIMER.
                                            ;IS TIME UP?
2382: A5 8D             LDA   APFALL
2384: 29 0F             AND   #$0F
2386: F0 03             BEQ   F03           ;JP TIME IS UP.
2388: 4C D7 24          JMP   FALL99
                ********************************
                * APPLE STAGE TIMER IS UP.
                *  DECIDE TO KP FALLING, BREAK, OR SIT->
                ********************************
                F03
238B: B5 D0             LDA   APBAND,X
238D: 29 0F             AND   #$0F          ;GET IMG IDX.
238F: C9 01             CMP   #1
2391: D0 05             BNE   F44
                                            ;START ROCK2 IMG->
2393: F6 D0             INC   APBAND,X      ;IMG IDX=2.
2395: 4C 59 24          JMP   SETTIM
                F44
2398: C9 02             CMP   #2
239A: D0 15             BNE   F55           ;JP NOT 2ND ROCK STAGE.
239C: F6 D0             INC   APBAND,X      ;IMG IDX=3 (FALLING APPLE).
                                            ;MOVE APPLE TO NEAREST COLUMN->
239E: B5 D4             LDA   APPOF,X
23A0: 29 07             AND   #7
23A2: C9 04             CMP   #4
23A4: B5 D4             LDA   APPOF,X
23A6: 90 02             BCC   F47           ;JP NO ADJUST RIGHT NEEDED.
23A8: 69 07             ADC   #7
                F47
23AA: 29 F8             AND   #$F8          ;RMV LO 3 BITS.
23AC: 95 D4             STA   APPOF,X
23AE: 4C 59 24          JMP   SETTIM
                F55
23B1: C9 03             CMP   #3            ;FALLING DOWN?
23B3: F0 18             BEQ   MIDAIR        ;JP YES.
23B5: C9 04             CMP   #4            ;BREAKING STAGE 1?
23B7: F0 0F             BEQ   F57           ;J Y.
                                            ;
                * MUST BE DONE W/LAST BRK STAGE->
                ********************************
                APRMV
23B9: A9 80             LDA   #$80
23BB: 95 D0             STA   APBAND,X      ;APPLE OFF.
23BD: 85 8D             STA   APFALL        ;NO AP FALLING NOW.
23BF: A9 1F             LDA   #$1F
23C1: 25 8E             AND   ANIM8         ;CLR DRAG BITS.
23C3: 85 8E             STA   ANIM8
23C5: 4C D7 24          JMP   FALL99
                F57
23C8: F6 D0             INC   APBAND,X      ;IMG IDX=4 =BRKING STAGE 2.
23CA: 4C 59 24          JMP   SETTIM
                                            ;
```

```
                    * KEEP MOVING APPLE DOWN IF NO FIELD(OR NOT ALREADY AT BOTTOM).
                    **************************************************************
                    MIDAIR
23CD: B5 D0                   LDA  APBAND,X
23CF: 29 70                   AND  #$70
23D1: D0 03                   BNE  MID5
23D3: 4C 62 24                JMP  SITBRK     ;J AT BOTTOM.
                    MID5
23D6: B5 D0                   LDA  APBAND,X
23D8: 38                      SEC
23D9: E9 10                   SBC  #$10       ;BAND-1.
23DB: B4 D4                   LDY  APPOF,X
23DD: 20 89 2D                JSR  CCTEST     ;FLD ON BELOW?
23E0: F0 03                   BEQ  MID15      ;JP FLD IS OFF:
23E2: 4C 62 24                JMP  SITBRK     ;FLD IS ON.
                    *  MOVE APPLE DOWN (FLD IS OFF)
                    ********************************
                    MID15
23E5: 95 D0                   STA  APBAND,X   ;SV NEW BAND NUM.
23E7: 29 70                   AND  #$70       ;KPBAND.
23E9: 85 F0                   STA  TEMP2
23EB: A9 0A                   LDA  #$0A       ;SET UP FALL/FRAME TIMER.
23ED: 05 8D                   ORA  APFALL
23EF: 85 8D                   STA  APFALL
                                              ;
                    * TEST IF MR DO  OR DIGS HIT BY APPLE->
                    ********************************
23F1: A0 02                   LDY  #2
                    DRAGT
23F3: B9 CA 24                LDA  DMASK,Y
23F6: 25 8E                   AND  ANIM8      ;MR DO ALREADY HIT BY APPLE?
23F8: F0 10                   BEQ  NYET       ;J N.
                                              ;
                    *MR DO/DIG BEING DRAGGED, MOVE HIM DOWN-->
                    *****************************************
23FA: B9 BD 00                LDA  DOBAND,Y
23FD: 30 54                   BMI  NXTTST     ;JP OFF
23FF: 38                      SEC
2400: E9 10                   SBC  #$10       ;BAND-1
2402: 29 F0                   AND  #$F0       ;LN=0
2404: 99 BD 00                STA  DOBAND,Y
2407: 4C 53 24                JMP  NXTTST
                                              ;
```

```
                * SHOULD MR DO/DIG BE DRAGGED?-->
                **********************************
                NYET
                                                ;TEST HORIZ->
240A: B9 C0 00          LDA   DOPOF,Y
240D: D5 D4             CMP   APPOF,X
240F: F0 16             BEQ   VTEST         ;J SAME POS.
2411: 90 0E             BCC   APRITE        ;JP DOPOS<APPOS.
                                            ;DOPOS>APPOS.
2413: E9 07             SBC   #7
2415: 10 02             BPL   APLEFT        ;J NO WRAP.
2417: A9 00             LDA   #0            ;DON'T LET WRAP.
                APLEFT
2419: D5 D4             CMP   APPOF,X
241B: F0 0A             BEQ   VTEST         ;J SAME.
241D: B0 34             BCS   NXTTST        ;J NO HIT.
241F: 90 06             BCC   VTEST
                APRITE
2421: 69 07             ADC   #7
2423: D5 D4             CMP   APPOF,X
2425: 90 2C             BCC   NXTTST        ;J NO HIT.
                                            ;TEST VERT->
                VTEST
2427: B9 BD 00          LDA   DOBAND,Y
242A: 30 27             BMI   NXTTST        ;J OFF.
242C: 29 70             AND   #$70          ;KP BAND.
242E: 38                SEC
242F: E5 F0             SBC   TEMP2         ;AP BAND.
2431: F0 19             BEQ   DRAGIT
2433: C9 10             CMP   #$10          ;IS DO/DIG 1 ABOVE?
2435: D0 1C             BNE   NXTTST        ;J N.
                                            ;DROP HIM A BAND.
2437: B9 BD 00          LDA   DOBAND,Y
243A: 29 0F             AND   #$0F          ;LN=0?
243C: D0 03             BNE   DRAGEM        ;J N.
243E: 98                TYA
243F: F0 12             BEQ   NXTTST        ;J MR DO.
                                            ;
                DRAGEM
2441: B9 BD 00          LDA   DOBAND,Y
2444: 38                SEC
2445: E9 10             SBC   #$10
2447: 29 F0             AND   #$F0          ;LN=0
2449: 99 BD 00          STA   DOBAND,Y
                                            ;NOW DRAG HIM->
                *  START DRAGGING MR DO OR DIG-->
                **********************************
                DRAGIT
244C: B9 CA 24          LDA   DMASK,Y
244F: 05 8E             ORA   ANIM8         ;SET BEING DRAGGED BIT.
2451: 85 8E             STA   ANIM8
                                            ;
                NXTTST
2453: 88                DEY
2454: 10 9D             BPL   DRAGT         ;TEST ALL 3.
2456: 4C D7 24          JMP   FALL99
                                            ;
```

```
                 >215  SETTIM
2459: A9 0F      >216           LDA  #$0F      ;SET UP 15 FRAME TIMER.
245B: 05 8D      >217           ORA  APFALL
245D: 85 8D      >218           STA  APFALL    ;SET TIMER.
245F: 4C D7 24   >219           JMP  FALL99    ;KP FALLING IF FLD IS NOT ON.
```

```
                                           ;
                * APPLE CAN NOT FALL ANY FURTHER.
                * TEST IF APPLE HAS FALLEN MORE
                * THAN 1 BAND FROM ORGIN-->
                * ALSO RMV ANYONE DRAGGED DOWN.*
                ********************************
                SITBRK
2462: A5 8E              LDA  ANIM8       ;GET DRAG FLAGS.
2464: 29 E0              AND  #$E0        ;ANY DRAGS?
2466: F0 3B              BEQ  SB25        ;J N DRAGS.
                                           ;
2468: A9 40              LDA  #$40
246A: 25 8E              AND  ANIM8
246C: F0 0A              BEQ  SB7         ;J DIG 1 NOT DRAGGED.
246E: A9 81              LDA  #$81
2470: 85 BE              STA  DIGBAND     ;DIG 1 OFF.
                ********************************
                *REV VIDEO LETTER IF ALF MNSTR *
                ********************************
2472: 20 82 2B           JSR  REVVID
2475: 20 CD 24           JSR  ADD1K       ;1000 PTS.
                SB7
2478: A9 20              LDA  #$20
247A: 25 8E              AND  ANIM8
247C: F0 07              BEQ  SB70        ;J DIG2 NOT DRAGGED.
247E: A0 81              LDY  #$81
2480: 84 BF              STY  DIGBAND+1   ;DIG2 OFF.
2482: 20 CD 24           JSR  ADD1K       ;1000 PTS.
                SB70
2485: A5 8E              LDA  ANIM8
2487: 10 17              BPL  SB88        ;J MR DO NOT DRAGGED.
                                           ;
2489: A9 81              LDA  #$81
248B: 85 BD              STA  DOBAND      ;DO OFF
248D: A9 20              LDA  #DODEAD
248F: 85 DA              STA  MODE
2491: A9 00              LDA  #0
2493: 85 84              STA  FRAMEL
2495: A9 FF              LDA  #$FF
2497: 85 BA              STA  MSBAND      ;BALL NOT AVAIL.
2499: A9 04              LDA  #4
249B: 85 BC              STA  MISDIR      ;BRIEF DELAY.
                                           ;
                * ADD BACK ANY DIGGERS NOT DEAD->
                ********************************
249D: 20 98 20           JSR  INCINV
                SB88
24A0: 4C BC 24           JMP  BRKIT       ;BRK APPLE-IT HIT SOMEONE.
                SB25
24A3: B5 D0              LDA  APBAND,X    ;GET BAND.
24A5: 29 70              AND  #$70        ;KP BAND.
24A7: 38                 SEC
24A8: FD C6 24           SBC  ORGTBL,X    ;SUB BAND NUM IT STARTED ON.
24AB: C9 F0              CMP  #$F0
24AD: D0 0D              BNE  BRKIT       ;JP IF FELL MORE THAN 1.
                                           ;LET APPLE SIT->
24AF: A9 80              LDA  #$80
24B1: 85 8D              STA  APFALL      ;APPLE DONE FALLING.
24B3: B5 D0              LDA  APBAND,X
24B5: 29 F0              AND  #$F0
24B7: 95 D0              STA  APBAND,X    ;IMG IDX=0.
24B9: 4C D7 24           JMP  FALL99
                * START BREAKING ANIMATION->
                ********************************
                BRKIT
```

```
24BC: F6 D0                INC   APBAND,X    ;IMG IDX=4 (BRK STAGE 1).
                                             ;MAKE BREAKING SOUND->
24BE: A9 00                LDA   #DEADSND
24C0: 20 41 2D             JSR   HISND       ;HI PRIORITY SND.
                                             ;X DESTROYED.
24C3: 4C 59 24             JMP   SETTIM
                 ********************************
                 * APPLE BAND ORGIN TABLE->
                 ORGTBL
                 ********************************
24C6: 70 50 30
24C9: 10                   DFB   $70,$50,$30,$10
                                             ;
                 * MASKS FOR BEING DRAGGED(ANIM8)
                 ********************************
                 DMASK
24CA: 80 40 20             DFB   $80,$40,$20 ;MR.DO,DIG1,DIG2.
                 ADD1K
24CD: A9 50                LDA   #$50
24CF: 20 23 2B             JSR   ADDPTS
24D2: A9 50                LDA   #$50
24D4: 4C 23 2B             JMP   ADDPTS      ;J THEN RET TO CALLER OF THIS RTN.
                                             ;
                 FALL99
```

```
                 **********************************
                 * VERTICAL RETRACE CODE           *
                 **********************************
                           PUT   MR.DO.VINT
                 */MR.DO.VINT LASTED: 8/1/83
                 *
                 **********************************
                 *        VERTICAL  RETRACE        *
                 **********************************
                 * WAIT FOR END OF BOTVI-->
                 **********************************
                 THEEND
24D7: 85 02                STA   ATWAIT
                 ENDTIM
24D9: AD 84 02             LDA   TIMER
24DC: 30 FB                BMI   ENDTIM
                                              ;
24DE: A9 A9                LDA   #TOPTIM
24E0: 85 02                STA   ATWAIT       ;VINT WAIT #1
24E2: 8D 96 02             STA   TIME64       ;START VINT TIMER.
                                              ;UP FRAME COUNTER->
24E5: E6 84                INC   FRAMEL
24E7: D0 1F                BNE   ALF99        ;JP NO OV.
24E9: E6 85                INC   FRAMEH
                                              ;
                 *  ADVANCE CHANNEL SELECT-->
                 **********************************
24EB: A9 02                LDA   #2
24ED: 25 8E                AND   ANIM8        ;ALF MONSTER OUT?
24EF: D0 17                BNE   ALF99        ;J Y.
24F1: A5 8B                LDA   ALPHA
24F3: 29 07                AND   #7
24F5: AA                   TAX
24F6: E8                   INX
24F7: E0 05                CPX   #5
24F9: D0 02                BNE   UPALPH       ;JP NO WRAP NEEDED.
24FB: A2 00                LDX   #0
                 UPALPH
24FD: A9 F8                LDA   #$FF-7
24FF: 25 8B                AND   ALPHA
2501: 85 8B                STA   ALPHA
2503: 8A                   TXA
2504: 05 8B                ORA   ALPHA
2506: 85 8B                STA   ALPHA        ;SV NEW CHANNEL SELECT.
                 ALF99
                                              ;50 CY MAX->
                 * MAINTAIN CHERRY EATING TIMER-->
                 **********************************
2508: A5 84                LDA   FRAMEL
250A: 29 01                AND   #1
250C: F0 0C                BEQ   NOTIM        ;JP NOT TIME TO UPDATE.
250E: A5 8C                LDA   CHERRYT
2510: 29 1F                AND   #$1F
2512: D0 04                BNE   EATS         ;JP TIME NOT EXPIRED.
2514: 85 8C                STA   CHERRYT      ;START NOTE PTR OVER.
2516: F0 02                BEQ   NOTIM
                 EATS
2518: C6 8C                DEC   CHERRYT      ;DEC TIMER FOR EATING.
                 NOTIM
```

```
                    ********************************
                    *  TURN  GUN  OFF--->         *
                    ********************************
                    WAIT2
251A: A9 02                   LDA   #$02          ;RESET JOY BUTTONS.
251C: 85 02                   STA   ATWAIT        ;VINT WAIT #2.
251E: 85 01                   STA   ATBLNK        ;TURN GUN OFF.
                    *ARE BOTH DIGGERS ON IF POSSIBLE?
                    ******************************
2520: A5 89                   LDA   BDUR
2522: 10 2A                   BPL   WAIT3         ;DON'T CHK IF MUSIC ON.
2524: A5 8A                   LDA   DIGINV        ;ANY DIGS LEFT?
2526: F0 26                   BEQ   WAIT3         ;J N.
                                                  ;
2528: A5 84                   LDA   FRAMEL
252A: 29 7F                   AND   #$7F
252C: D0 20                   BNE   WAIT3         ;CHK EV 2 SECS.
252E: A2 00                   LDX   #0
2530: B5 BE                   LDA   DIGBAND,X
2532: 30 05                   BMI   D1ON          ;J DIG1 IS OFF.
2534: E8                      INX
2535: B5 BE                   LDA   DIGBAND,X
2537: 10 15                   BPL   WAIT3         ;J HE'S ON TOO.
                    D1ON
                                                  ;TURN HIM ON->
2539: A9 38                   LDA   #56
253B: 95 C1                   STA   DIGPOF,X
253D: A9 40                   LDA   #$40
253F: 95 BE                   STA   DIGBAND,X
2541: A9 00                   LDA   #0
2543: 95 C4                   STA   DIGDAT,X
2545: B4 C8                   LDY   DIGSPD,X
2547: B9 6D 2F                LDA   DTIME,Y
254A: 95 CA                   STA   DIGTIM,X      ;SET UP TIME TILL DIGGING.
254C: C6 8A                   DEC   DIGINV        ;1 LESS DIG.
```

```
                      WAIT3
254E: 85 02                     STA  ATWAIT      ;VINT WAIT #3.
                      * HAVE ALL LETTERS BEEN HAD?
                      ********************************
2550: A5 DA                     LDA  MODE
2552: C9 10                     CMP  #PLAY
2554: D0 21                     BNE  WAIT4       ;J NOT PLAY MODE.
                                                 ;
2556: A9 F8                     LDA  #$F8
2558: 25 8B                     AND  ALPHA
255A: C9 F8                     CMP  #$F8
255C: D0 19                     BNE  WAIT4       ;J NOT ALL HAD.
255E: A9 00                     LDA  #0
2560: 85 8B                     STA  ALPHA       ;CLR REV VIDEO.
                      *  GIVE AN EXTRA MR.DO-->
                      ********************************
2562: A5 DB                     LDA  DOINV
2564: C9 06                     CMP  #6
2566: F0 02                     BEQ  NOXTRA      ;J HAVE MAX.
2568: E6 DB                     INC  DOINV       ;ADD 1 TO INV.
                      NOXTRA
256A: A9 00                     LDA  #0          ;DANCE L TO R.
256C: 85 C0                     STA  DOPOF
                                                 ;
                      *  SET  EXTRA  MR DO  MODE--->
                      ********************************
256E: A9 70                     LDA  #XTRADO     ;SET EXTRA MR DO MODE.
2570: 85 DA                     STA  MODE
                                                 ;
2572: A9 00                     LDA  #SONG1
2574: 20 2C 2D                  JSR  SONG        ;PLAY SONG
```

```
                     WAIT4
2577: 85 02                    STA   ATWAIT      ;VINT WAIT #4.
2579: A5 DA                    LDA   MODE
257B: C9 40                    CMP   #GAMOVR
257D: D0 0B                    BNE   W44         ;J NOT GAME OVER MODE.
257F: A5 85                    LDA   FRAMEH
2581: F0 66                    BEQ   WAIT5
                                                 ;
                     *  SET  TRACK  MODE-->
                     ********************************
                     SETTRK
2583: A9 50                    LDA   #TRACK
2585: 85 DA                    STA   MODE        ;SET TRACK MODE.
2587: 4C E9 25                 JMP   WAIT5
                     W44
258A: C9 30                    CMP   #SELECT
258C: D0 08                    BNE   W45
258E: A5 85                    LDA   FRAMEH
2590: C9 0A                    CMP   #10
2592: D0 55                    BNE   WAIT5
2594: F0 ED                    BEQ   SETTRK      ;SET TRACK MODE->
                     W45
2596: C9 20                    CMP   #DODEAD
2598: D0 4F                    BNE   WAIT5
                                                 ;
                     *  SEE IF MR.DO IS ON-->
                     ********************************
259A: A5 84                    LDA   FRAMEL
259C: C9 80                    CMP   #$80
259E: F0 1A                    BEQ   W47         ;J TO TURN ON MR DO.
                                                 ;
25A0: C9 40                    CMP   #$40
25A2: D0 45                    BNE   WAIT5
                                                 ;
25A4: A9 FF                    LDA   #$FF
25A6: 85 BD                    STA   DOBAND      ;DO OFF.
25A8: 85 BE                    STA   DIGBAND
25AA: 85 BF                    STA   DIGBAND+1
25AC: 85 BA                    STA   MSBAND      ;PWRBALL NOT ON YET.
25AE: A9 00                    LDA   #0
25B0: 85 C4                    STA   DIGDAT
25B2: 85 C5                    STA   DIGDAT+1
25B4: 85 8E                    STA   ANIM8       ;CLR DRAG BITS.
25B6: 85 BC                    STA   MISDIR      ;SHORT DELAY.
25B8: F0 2F                    BEQ   WAIT5
                                                 ;
                     W47
25BA: A5 DB                    LDA   DOINV
25BC: D0 1B                    BNE   W46         ;J SOME LEFT.
                                                 ;
                     *  GAME  IS  OVER!!!
                     ********************************
                     GOVER
25BE: A9 40                    LDA   #GAMOVR     ;START GAME OVER MODE.
25C0: 85 DA                    STA   MODE
                                                 ;
25C2: A9 00                    LDA   #0
25C4: 85 84                    STA   FRAMEL
25C6: 85 85                    STA   FRAMEH      ;4 SEC GAME OVER SCREEN.
                                                 ;GAME OVER SONG->
25C8: A9 31                    LDA   #SONG2
25CA: 20 2C 2D                 JSR   SONG
                                                 ;
25CD: A9 38                    LDA   #56
25CF: 85 C0                    STA   DOPOF
```

```
25D1: A9 FF                  LDA   #$FF
25D3: 85 BE                  STA   DIGBAND       ;DIGS OFF.
25D5: 85 BF                  STA   DIGBAND+1
25D7: D0 10                  BNE   WAIT5
                                                 ;
               ********************************
               *    PUT  MR DO BACK ON SCREEN  *
               ********************************
               W46
25D9: C6 DB                  DEC   DOINV         ;1 LESS MR DO.
                                                 ;
25DB: A9 10                  LDA   #PLAY
25DD: 85 DA                  STA   MODE
25DF: A9 38                  LDA   #56
25E1: 85 C0                  STA   DOPOF
25E3: A9 00                  LDA   #0
25E5: 85 BD                  STA   DOBAND
25E7: 85 D8                  STA   PWRTIM        ;SET PWRTIMER TO 0.
```

```
                  WAIT5
25E9: A9 02                LDA  #2
25EB: 85 02                STA  ATWAIT      ;VINT WAIT #5.
25ED: 85 00                STA  ATSYNC      ;BRING GUN HOME.
25EF: A5 DA                LDA  MODE
25F1: C9 80                CMP  #RESUM
25F3: D0 0C                BNE  WAIT6
25F5: A5 84                LDA  FRAMEL
25F7: D0 08                BNE  WAIT6       ;BLACK SCREEN.
25F9: E6 81                INC  ROUND
25FB: 20 A9 29             JSR  IROUND      ;START PLAY MODE AGAIN.
25FE: 4C 05 26             JMP  WAIT7
                                            ;
```

```
                  WAIT6
2601: 85 02                 STA   ATWAIT     ;VINT WAIT #6
2603: E6 D9                 INC   RANDOM     ;FREE RUNNING RANDOM #.
                  WAIT7
2605: 85 02                 STA   ATWAIT
                                             ;
2607: A5 DA                 LDA   MODE
2609: C9 70                 CMP   #XTRADO
260B: D0 12                 BNE   NOX        ;J NOT EXTRA MR DO MODE.
                                             ;DANCE R TO L.
260D: A5 84                 LDA   FRAMEL
260F: 29 01                 AND   #1
2611: D0 0C                 BNE   NOX
2613: E6 C0                 INC   DOPOF
2615: 10 08                 BPL   NOX
                                             ;SET RESUME MODE->
2617: A9 80                 LDA   #RESUM
2619: 85 DA                 STA   MODE
261B: A9 E8                 LDA   #$E8       ;SHORT DELAY.
261D: 85 84                 STA   FRAMEL
                  NOX
261F: A9 00                 LDA   #0
2621: 85 02                 STA   ATWAIT
2623: 85 00                 STA   ATSYNC
                                             ;
2625: A9 00                 LDA   #BLACK
2627: 85 09                 STA   ATSCOL     ;BLACK.
                                             ;
```

```
                *  MANAGE DIGGING TIMERS-->
                ********************************
                EV0
2629: A5 DA                  LDA   MODE
262B: C9 10                  CMP   #PLAY
262D: D0 3F                  BNE   EV099
                                               ;
262F: A5 84                  LDA   FRAMEL
2631: 29 7F                  AND   #$7F
2633: D0 39                  BNE   EV099       ;CHK EV 2 SEC.
                                               ;
                EV0CHK
2635: A2 01                  LDX   #1
                EV02
2637: B5 BE                  LDA   DIGBAND,X
2639: 30 30                  BMI   EV088       ;J NOT ON
263B: B5 CA                  LDA   DIGTIM,X
263D: 10 1B                  BPL   EV07        ;J NOT DIGGING YET.
                                               ;
263F: 29 0F                  AND   #$0F
2641: D0 26                  BNE   DTIM9       ;J NOT TIME TO TURN BACK TO BADGUY
.
                                               ;
                * TURN DIGGER BACK TO BADGUY->
                ********************************
2643: A9 00                  LDA   #0
2645: 95 C4                  STA   DIGDAT,X    ;CHG IMG
2647: B4 C8                  LDY   DIGSPD,X
2649: B9 6D 2F               LDA   DTIME,Y
264C: 95 CA                  STA   DIGTIM,X    ;SET TIME TO DIG NEXT.
                EV05
264E: 8A                     TXA
264F: D0 18                  BNE   DTIM9       ;J N DIG1.
                                               ;CLR ALF OUT FLAG->
2651: A9 FD                  LDA   #$FF-2
2653: 25 8E                  AND   ANIM8
2655: 85 8E                  STA   ANIM8
2657: 4C 69 26               JMP   DTIM9
                EV07
265A: D0 0D                  BNE   DTIM9       ;J NOT TIME TO DIG.
                *  TURN BADGUY TO DIGGER->
                ********************************
265C: A9 02                  LDA   #2
265E: 95 C4                  STA   DIGDAT,X    ;CHG IMG.
2660: B4 C8                  LDY   DIGSPD,X
                                               ;GET HOW LONG TO DIG->
2662: B9 81 2F               LDA   DDUR,Y
2665: 95 CA                  STA   DIGTIM,X
2667: D0 E5                  BNE   EV05        ;J ALWAYS.
                DTIM9
2669: D6 CA                  DEC   DIGTIM,X
                EV088
266B: CA                     DEX
266C: 10 C9                  BPL   EV02        ;DO BOTH.
                                               ;
                EV099
266E: A5 DA                  LDA   MODE
2670: C9 10                  CMP   #PLAY
2672: D0 42                  BNE   NOCHER
                                               ;
2674: A5 84                  LDA   FRAMEL
2676: 29 01                  AND   #1
2678: AA                     TAX
2679: B5 CA                  LDA   DIGTIM,X
267B: 10 09                  BPL   NOTDIG
```

```
                                        ;
                *  DO DIGGER VS. CHERRY HIT->
                ******************************
267D: B5 BE                 LDA  DIGBAND,X
267F: 30 05                 BMI  NOTDIG     ;J OFF.
2681: B4 C1                 LDY  DIGPOF,X
2683: 20 7F 2A              JSR  CHIT
                NOTDIG
                *  DO MR.DO  VS CHERRY HIT->
                ******************************
2686: A5 BD                 LDA  DOBAND
2688: 30 2C                 BMI  NOCHER     ;J DO OFF
268A: A4 C0                 LDY  DOPOF
268C: 20 7F 2A              JSR  CHIT       ;MR DO V. CHERRIES.
268F: 90 25                 BCC  NOCHER     ;J NO HIT CHERRY.
                                            ;
                *  MAKE CHERRY SOUND + ADD PTS->
                ******************************
2691: A5 8C                 LDA  CHERRYT
                                            ;GET WHICH CHERRY WAS ATE->
2693: 4A                    LSR
2694: 4A                    LSR
2695: 4A                    LSR
2696: 4A                    LSR
2697: 4A                    LSR
2698: AA                    TAX
                                            ;
2699: BD 1D 2B              LDA  CHRPTS,X
269C: 20 23 2B              JSR  ADDPTS
                                            ;
269F: BD 17 2B              LDA  CNOTE,X
26A2: 20 3D 2D              JSR  SOUND      ;PLAY CHERRY SOUND.
                                            ;X DESTROYED.
                                            ;UP CHERRY PTR->
26A5: A5 8C                 LDA  CHERRYT
26A7: 29 E0                 AND  #$E0
26A9: 18                    CLC
26AA: 69 20                 ADC  #$20
26AC: C9 C0                 CMP  #$C0       ;ATE 6 ALREADY?
26AE: D0 02                 BNE  CTIME      ;J N.
26B0: A9 00                 LDA  #0
                CTIME
26B2: 09 1F                 ORA  #$1F       ;SET TIMER.
26B4: 85 8C                 STA  CHERRYT
                NOCHER
```

```
                    ********************************
                    * JOYSTICK & SWITCH READING    *
                    ********************************
                            PUT   MR.DO.JOYSTICK    *
                    */ MR.DO.JOYSTICK LASTED:8/14/83
                    ********************************
                    *   JOYSTICK READ RTN ->       *
                    ********************************
26B6: A5 89                 LDA   BDUR
26B8: 30 03                 BMI   JOYRD         ;JP NO MUSIC ON.
                    NJOY
26BA: 4C 67 27              JMP   BUTTON        ;SKIP JOY & BUTTON.
                    JOYRD
26BD: A5 DA                 LDA   MODE
26BF: C9 10                 CMP   #PLAY
26C1: D0 F7                 BNE   NJOY
                                                ;
26C3: A5 BD                 LDA   DOBAND
26C5: 30 F3                 BMI   NJOY
26C7: A5 84                 LDA   FRAMEL
26C9: 29 01                 AND   #1
26CB: D0 ED                 BNE   NJOY          ;ONLY READ EVERY OTHER FRAME.
26CD: A9 80                 LDA   #$80
26CF: 25 8E                 AND   ANIM8
26D1: D0 E7                 BNE   NJOY          ;JP IF DO BEING DRAGGED DOWN.
                                                ;
26D3: A9 01                 LDA   #1
26D5: 85 F5                 STA   TEMP7         ;INIT TRIES.
                                                ;
26D7: AD 80 02              LDA   JOYDAT        ;GET JOY
26DA: 49 FF                 EOR   #$FF
26DC: 85 F7                 STA   TEMP9
26DE: A9 10                 LDA   #JOYAUP
26E0: 25 F7                 AND   TEMP9
26E2: F0 03                 BEQ   JOY1          ;JP NOT UP.
26E4: 4C 3E 27              JMP   UP
                    JOY1
26E7: A9 20                 LDA   #JOYADN
26E9: 25 F7                 AND   TEMP9
26EB: D0 42                 BNE   DOWN
26ED: A9 80                 LDA   #JOYART
26EF: 25 F7                 AND   TEMP9
26F1: D0 2D                 BNE   RIGHT
26F3: A9 40                 LDA   #JOYALT
26F5: 25 F7                 AND   TEMP9
26F7: D0 18                 BNE   LEFT
                                                ;
                    *  THERE'S NO JOY, BUT KEEP MR DO
                    * MOVING UNTIL AT A CHAR CELL.
                    ********************************
26F9: A5 BD                 LDA   DOBAND
26FB: 29 0F                 AND   #$0F
26FD: F0 03                 BEQ   CHKHRZ        ;JP IF BETWEEN 2 BANDS.
26FF: 4C 4B 27      ILL1    JMP   ILLEG
                    CHKHRZ
2702: A5 C0                 LDA   DOPOF
2704: 29 07                 AND   #7
2706: D0 F7                 BNE   ILL1          ;JP NOT IN A CHAR CELL.
                                                ;STOP ANIMATION.
2708: A9 FE                 LDA   #$FE
270A: 25 8E                 AND   ANIM8
270C: 85 8E                 STA   ANIM8
270E: 4C 67 27              JMP   JOY99
                                                ;
                    *  TRY TO MOVE MR DO LEFT->      *
```

```
                   *   TRY TO MOVE MR DO LEFT->    *
                   ********************************
                   LEFT
2711: A2 00                  LDX  #0
2713: 20 A6 2C               JSR  MLEFT
2716: A9 03                  LDA  #3          ;LEFT.
2718: 90 4B                  BCC  JOY98       ;J LEGAL MV. MADE.
271A: C5 B8                  CMP  LASTJY
271C: F0 49                  BEQ  JOY99       ;J LAST JY SAME AS 1 JUST TRIED.
271E: D0 2B                  BNE  ILLEG
                                              ;
                   *   TRY TO MOVE MR DO RIGHT->   *
                   ********************************
                   RIGHT
2720: A2 00                  LDX  #0
2722: 20 3D 2C               JSR  MRIGHT
2725: A9 02                  LDA  #2          ;RIGHT.
2727: 90 3C                  BCC  JOY98       ;J LEGAL MV MADE.
2729: C5 B8                  CMP  LASTJY
272B: F0 3A                  BEQ  JOY99       ;J ALREADY TRIED THAT DIR.
                                              ;
272D: D0 1C                  BNE  ILLEG
                                              ;
                                              ;
                   *  TRY TO MOVE MR DO DOWN->     *
                   ********************************
                   DOWN
272F: A2 00                  LDX  #0
2731: 20 AF 2B               JSR  MDOWN
2734: A9 01                  LDA  #1          ;DOWN.
2736: 90 2D                  BCC  JOY98       ;J LEGAL MV MADE.
2738: C5 B8                  CMP  LASTJY
273A: F0 2B                  BEQ  JOY99
273C: D0 0D                  BNE  ILLEG
                                              ;
                   *  TRY TO MOVE MR. DO UP->      *
                   ********************************
                   UP
273E: A2 00                  LDX  #0
2740: 20 F7 2B               JSR  MUP
2743: A9 00                  LDA  #0          ;UP.
2745: 90 1E                  BCC  JOY98       ;J LEGAL MV MADE.
2747: C5 B8                  CMP  LASTJY
2749: F0 1C                  BEQ  JOY99
                                              ;
                                              ;
                   * AN ILLEGAL JOY MOVE WAS TRIED.
                   * TRY LAST LEGAL DIRECTION--->
                   ********************************
                   ILLEG
274B: C6 F5                  DEC  TEMP7       ;DEC TRIES.
274D: 30 18                  BMI  JOY99       ;J ALREADY TRIED LASTJY.
274F: A5 B8                  LDA  LASTJY
2751: F0 EB                  BEQ  UP          ;UP=0.
2753: C9 01                  CMP  #1
2755: F0 D8                  BEQ  DOWN        ;DOWN=1.
                                              ;
2757: A5 C0                  LDA  DOPOF
2759: 29 07                  AND  #7
275B: F0 0A                  BEQ  JOY99
                                              ;
275D: A5 B8                  LDA  LASTJY
275F: C9 02                  CMP  #2
2761: F0 BD                  BEQ  RIGHT       ;RIGHT=2
2763: D0 AC                  BNE  LEFT        ;LEFT=3.
                   JOY98
2765: 85 B8                  STA  LASTJY
```

```
2765: 85 B8     >127            STA  LASTJY
                >128  JOY99
```

```
                  ********************************
                  BUTTON
2767: A5 84                  LDA   FRAMEL
2769: 29 01                  AND   #1
276B: F0 61                  BEQ   NOBUT
                                                 ;
276D: A5 3C                  LDA   ATJBA         ;RD JOY BUTTON A.
276F: 30 5D                  BMI   NOBUT         ;JP BUTTON NOT DOWN.
                                                 ;IS GAME OVER???
2771: A5 DA                  LDA   MODE
2773: C9 50                  CMP   #TRACK
2775: F0 04                  BEQ   BUT4          ;J TRYING TO START GAME OVER.
2777: C9 30                  CMP   #SELECT
2779: D0 06                  BNE   BUT5
                  BUT4
277B: 20 89 29               JSR   IGAME         ;START GAME OVER.
277E: 4C CE 27               JMP   NOBUT
                                                 ;
                  * TRYING TO FIRE POWERBALL-->
                  ********************************
                  BUT5
2781: C9 10                  CMP   #PLAY
2783: D0 49                  BNE   NOBUT         ;J NOT PLAY MODE.
2785: A5 89                  LDA   BDUR
2787: 10 45                  BPL   NOBUT         ;J MUSIC ON.
2789: A5 8E                  LDA   ANIM8         ;BEING DRAGGED?
278B: 30 41                  BMI   NOBUT         ;J Y.
278D: A5 BA                  LDA   MSBAND
278F: 30 3D                  BMI   NOBUT         ;J BALL IS NOT AVAIL.
2791: A5 BC                  LDA   MISDIR
2793: 10 39                  BPL   NOBUT         ;J BALL ALREADY MOVING(SHOT).
                                                 ;
                  *  SHOOT PWR BALL->
                  ********************************
2795: A5 C0                  LDA   DOPOF
2797: A6 B8                  LDX   LASTJY        ;GET MR DO DIR.
2799: 18                     CLC
279A: 7D 23 28               ADC   PWROFF,X
279D: 30 2F                  BMI   NOBUT         ;IF AT EDGE,NO PWRBALL.
279F: 85 BB                  STA   MISPOF
                                                 ;
27A1: BD 1F 28               LDA   PWRLN,X
27A4: 85 B9                  STA   MISLN
                                                 ;
                  * SHOOT ONLY IF FLD OFF->
                  ********************************
27A6: E0 00                  CPX   #0
27A8: F0 06                  BEQ   SAM1          ;J IF UP.
27AA: A5 BD                  LDA   DOBAND
27AC: 29 0F                  AND   #$0F
27AE: D0 05                  BNE   BLOW1
                  SAM1
27B0: A5 BD                  LDA   DOBAND
27B2: 4C BA 27               JMP   FTST
                  BLOW1
27B5: A5 BD                  LDA   DOBAND
27B7: 38                     SEC
27B8: E9 10                  SBC   #$10          ;1 LOWER.
                  FTST
27BA: A6 C0                  LDX   DOPOF
27BC: 20 4E 2D               JSR   FMTEST        ;FLD ON?
27BF: D0 0D                  BNE   NOBUT         ;J Y.
27C1: 4A                     LSR
27C2: 4A                     LSR
```

```
27C3: 4A                        LSR
27C4: 4A                        LSR       ;
                 SAMEBD
27C5: 85 BA                     STA   MSBAND
27C7: A6 B8                     LDX   LASTJY
27C9: BD 27 28                  LDA   PWRDIR,X
27CC: 85 BC                     STA   MISDIR
                 NOBUT
```

```
                  ********************************
                  *  RESET, SELECT & COLOR        *
                  *    SWITCH READING--->         *
                  ********************************
                  SWIT
27CE: AD 82 02              LDA   SWITCH      ;RD SWITCHES.
27D1: 49 FF                 EOR   #$FF
27D3: 29 01                 AND   #SWIRES     ;RESET?
27D5: F0 03                 BEQ   NORES       ;JP NO.
27D7: 20 89 29              JSR   IGAME       ;START GAME OVER
                  NORES
                  * TEST FOR  GAME SELECT SWITCH-->
                  ********************************
27DA: A5 84                 LDA   FRAMEL
27DC: 29 1F                 AND   #$1F
27DE: D0 27                 BNE   NOSEL
                                              ;
27E0: AD 82 02              LDA   SWITCH
27E3: 49 FF                 EOR   #$FF
27E5: 29 02                 AND   #SWISEL     ;JP SELECT NOT DOWN.
27E7: F0 1E                 BEQ   NOSEL
27E9: 85 84                 STA   FRAMEL
27EB: 85 85                 STA   FRAMEH
                                              ;SET SELECT MODE->
27ED: A5 DA                 LDA   MODE
27EF: C9 30                 CMP   #SELECT
27F1: D0 0C                 BNE   SEL2        ;DON'T UP GAME NUM 1ST TIME.
27F3: E6 80                 INC   GAME        ;UP GAME NUM.
27F5: A5 80                 LDA   GAME
27F7: C9 04                 CMP   #4          ;MAX GAME NUM?
27F9: D0 0C                 BNE   NOSEL       ;J NO WRAP.
                                              ;
27FB: A9 00                 LDA   #0
27FD: 85 80                 STA   GAME        ;WRAP.
                  SEL2
27FF: A9 30                 LDA   #SELECT
2801: 85 DA                 STA   MODE
2803: A9 38                 LDA   #56
2805: 85 C0                 STA   DOPOF
                  NOSEL
2807: A5 81                 LDA   ROUND
2809: 29 0F                 AND   #$0F
280B: A8                    TAY
280C: A2 04                 LDX   #4          ;SAME COL FOR B/W.
280E: AD 82 02              LDA   SWITCH
2811: 49 FF                 EOR   #$FF
2813: 29 08                 AND   #SWICOL
2815: D0 03                 BNE   BLKWHT
2817: BE 2B 28              LDX   FLDCOL,Y
                  BLKWHT
281A: 86 8F                 STX   FCOLOR
281C: 4C 3B 28              JMP   ENDJOY
```

```
                                                ;
                    * STARTING PWRBALL LINENUMS->
                    ********************************
                    PWRLN
281F: 0E 01 07
2822: 07                      DFB  14,1,7,7     ;U,D,R,L
                                                ;
                    * PWRBALL STARTING POS OFFSETS FR.MRDO
                    ********************************
                    PWROFF
2823: 03 03 07
2826: 00                      DFB  3,3,7,0      ;UDRL
                                                ;
                    * PWRBALL STARTING DIRECTIONS->
                    ********************************
                    PWRDIR
2827: 02 00 00
282A: 01                      DFB  2,0,0,1      ;MRDO DIR=UDRL.
                                                ;PWR DIR=UR,DR,DR,DL.
                                                ;
                    *   ORCHARD COLOR TABLE
                    ********************************
                    FLDCOL
282B: D2 92 E2
282E: C4                      DFB  $D2,$92,$E2,$C4
282F: 04 74 F2
2832: 52                      DFB  $04,$74,$F2,$52
2833: A4 D4 B4
2836: 64                      DFB  $A4,$D4,$B4,$64
2837: 30 82 E4
283A: A4                      DFB  $30,$82,$E4,$A4
                                                ;
                    ENDJOY
                                                ;
```

```
                 ********************************
                 * POWERBALL CONTROL CODE       *
                 ********************************
                          PUT   MR.DO.PWRBALL
                 */MR.DO.PWRBALL LASTED: 8/2/83
                 ********************************
                 *  POWERBALL MONITOR-->        *
                 ********************************
283B: A5 DA               LDA   MODE
283D: C9 10               CMP   #PLAY
283F: D0 0A               BNE   NOPWR       ;J NOT PLAY MODE.
2841: A5 BA               LDA   MSBAND
2843: 10 12               BPL   PWR2        ;J BALL IS ON OR AVAIL
                 ********************************
                 * BALL IS NOT ON YET-->        *
                 ********************************
2845: A5 84               LDA   FRAMEL
2847: 29 1F               AND   #$1F        ;CHK EV 1/2 SEC.
2849: F0 03               BEQ   PWRDEC
                 NOPWR
284B: 4C 86 29            JMP   PWR99       ;J NOT TIME TO DEC COUNT.
                 PWRDEC
284E: C6 BC               DEC   MISDIR      ;DEC TIMER.
2850: 10 F9               BPL   NOPWR       ;J TIME NOT UP.
                 ********************************
                 *  MAKE BALL AVAILIBLE-->
                 ********************************
                 AVAIL
2852: A9 14               LDA   #BELLS      ;BALL AVAIL SND.
2854: 20 37 2D            JSR   LOSND       ;LO PRIORITY SND.
                 PWR2
2857: A5 BC               LDA   MISDIR
2859: 10 31               BPL   PWR0        ;J BALL MOVING.
                 ********************************
                 *  KEEP BALL IN MR DO'S HAND->
                 ********************************
                                            ;SET UP VERT POS->
285B: A5 BD               LDA   DOBAND
285D: 29 0F               AND   #$0F
285F: AA                  TAX               ;LN.
2860: BD 71 29            LDA   PWLN,X
2863: 85 B9               STA   MISLN
2865: A5 BD               LDA   DOBAND
2867: 4A                  LSR
2868: 4A                  LSR
2869: 4A                  LSR
286A: 4A                  LSR
286B: A8                  TAY               ;Y=MR DO BAND.
286C: E0 0A               CPX   #10         ;MRDO LN>10?
286E: 90 01               BCC   SAME        ;J Y.
2870: 88                  DEY               ;MAKE MS BAND 1 LESS THAN MR.DO.
                 SAME
2871: 84 BA               STY   MSBAND
                                            ;
                 ********************************
                 * MAKE HORIZ POF= MR DO'S HAND *
                 ********************************
2873: A5 C0               LDA   DOPOF
2875: A6 B8               LDX   LASTJY
2877: 18                  CLC
2878: 7D 6D 29            ADC   PWPOF,X
287B: 10 0A               BPL   PP3
287D: C9 80               CMP   #128
287F: D0 04               BNE   PP2         ;J NOT LEFT EDGE.
2881: A9 7F               LDA   #127
```

```
287F: D0 04    >60           BNE  PP2         ;0 NOT LEFT EDGE.
2881: A9 7F    >61           LDA  #127
2883: D0 02    >62           BNE  PP3         ;RT EDGE.
               >63     PP2
2885: A9 00    >64           LDA  #0          ;DON'T LET OFF LEFT SIDE.
               >65     PP3
2887: 85 BB    >66           STA  MISPOF
2889: 4C 86 29 >67           JMP  PWR99
               >68                            ;
```

```
                * BALL IS ON-DO HIT V.MR DO&DIGS
                ********************************
                PWR0
288C: A2 00             LDX   #0          ;DO IDX.
288E: A5 84             LDA   FRAMEL
2890: 29 01             AND   #1
2892: D0 0F             BNE   PWR3        ;J NOT TIME TO TEST MR DO.
2894: 20 A9 2F          JSR   PWRHIT
2897: B0 03             BCS   CATCH       ;J DO CAUGHT BALL.
2899: 4C DC 28          JMP   PWRMOV
                                          ;
                *     MR DO CAUGHT BALL->
                ********************************
                CATCH
289C: A9 81             LDA   #$81
289E: 85 BC             STA   MISDIR      ;BALL AVAIL NOW.
28A0: 4C 57 28          JMP   PWR2
                                          ;
                * POWERBALL VS DIGS TEST-->
                ********************************
                PWR3
28A3: A2 02             LDX   #2
                PWR55
28A5: 20 A9 2F          JSR   PWRHIT
28A8: B0 06             BCS   PWR66       ;J HIT.
28AA: CA                DEX
28AB: D0 F8             BNE   PWR55       ;TEST OTHER DIG.
28AD: 4C DC 28          JMP   PWRMOV      ;J NO HIT.
                                          ;
                * ONE OF THE DIGGERS IS HIT->
                ********************************
                PWR66
28B0: 8A                TXA
28B1: 48                PHA               ;SV X.
28B2: A9 00             LDA   #DEADSND
28B4: 20 41 2D          JSR   HISND       ;MAKE DYING SOUND.
28B7: 68                PLA
28B8: AA                TAX               ;RSTR X.
                                          ;KILL THAT DIGGER->
28B9: A9 80             LDA   #$80
28BB: 95 BD             STA   DOBAND,X
28BD: E0 01             CPX   #1
28BF: D0 03             BNE   PWR84       ;J NOT DIG1.
                                          ;
                ********************************
                *REVERSE VIDEO LETTER IF ALF MSTR
                ********************************
28C1: 20 82 2B          JSR   REVVID
                                          ;
                ********************************
                * SET TIME B4 PWRBALL AVAIL NEXT
                ********************************
                PWR84
28C4: A9 50             LDA   #$50
28C6: 20 23 2B          JSR   ADDPTS
                                          ;
28C9: A4 D8             LDY   PWRTIM
28CB: B9 81 29          LDA   PTIME,Y
28CE: 85 BC             STA   MISDIR
28D0: C8                INY
28D1: C0 05             CPY   #5
28D3: D0 02             BNE   PWR86
28D5: A0 00             LDY   #0
                PWR86
28D7: 84 D8             STY   PWRTIM
```

```
28D7: 84 DB     >134          STY   PWRTIM
                >135                              ;
28D9: 4C 86 29  >136          JMP   PWR99
```

```
                    ********************************
                    * MOVE BALL HORIZONTALLY-->
                    ********************************
                    PWRMOV
28DC: A5 BC                 LDA  MISDIR
28DE: 29 01                 AND  #1          ;GET HORIZ DIR.
28E0: 08                    PHP
28E1: A9 01                 LDA  #1
28E3: 28                    PLP
28E4: F0 02                 BEQ  PRIGHT
28E6: A9 FF                 LDA  #$FF        ;LEFT
                    PRIGHT
28E8: 18                    CLC
28E9: 65 BB                 ADC  MISPOF
28EB: C9 80                 CMP  #128
28ED: F0 14                 BEQ  HCHG
28EF: C9 FF                 CMP  #$FF
28F1: F0 10                 BEQ  HCHG
28F3: 85 BB                 STA  MISPOF
28F5: A5 BA                 LDA  MSBAND
28F7: 0A                    ASL
28F8: 0A                    ASL
28F9: 0A                    ASL
28FA: 0A                    ASL
28FB: AA                    TAX
28FC: A6 BB                 LDX  MISPOF
28FE: 20 4E 2D              JSR  FMTEST
2901: F0 0E                 BEQ  VCHK        ;JP FLD OFF.
                    HCHG
2903: A9 01                 LDA  #1
2905: 45 BC                 EOR  MISDIR
2907: 85 BC                 STA  MISDIR      ;CHG HOR DIR.
2909: A9 08                 LDA  #BEEP
290B: 20 3D 2D              JSR  SOUND       ;LO PRIORITY SND.
                                             ;X DESTROYED.
                    HOR99
290E: 4C 86 29              JMP  PWR99
```

```
                     *******************************
                     * MOVE POWERBALL VERTICALLY-> *
                     *******************************
                     VCHK
2911: A5 BC                  LDA  MISDIR
2913: 29 02                  AND  #2
2915: F0 37                  BEQ  PDOWN
                     *******************************
                     * MOVE POWERBALL UP-->
                     *******************************
2917: A6 B9                  LDX  MISLN
2919: E0 0E                  CPX  #14
291B: F0 05                  BEQ  PUR4        ;J TO CHANGE BANDS.
291D: E6 B9                  INC  MISLN
291F: 4C 86 29               JMP  PWR99
                     PUR4
2922: A6 BA                  LDX  MSBAND
2924: E0 07                  CPX  #7
2926: F0 18                  BEQ  VCHG        ;J AT TOP OF SCREEN.
2928: E6 BA                  INC  MSBAND
292A: A5 BA                  LDA  MSBAND
292C: 0A                     ASL
292D: 0A                     ASL
292E: 0A                     ASL
292F: 0A                     ASL
2930: A6 BB                  LDX  MISPOF
2932: 20 4E 2D               JSR  FMTEST
2935: D0 07                  BNE  VCHG1       ;J FLD OFF.
2937: A9 01                  LDA  #1
2939: 85 B9                  STA  MISLN
293B: 4C 86 29               JMP  PWR99
                     VCHG1
293E: C6 BA                  DEC  MSBAND
                     VCHG
2940: A9 02                  LDA  #2
2942: 45 BC                  EOR  MISDIR
2944: 85 BC                  STA  MISDIR
                                              ;
2946: A9 0E                  LDA  #BOOP
2948: 20 3D 2D               JSR  SOUND       ;LO PRIORITY SND.
                                              ;X DESTROYED.
                     VERT99
294B: 4C 86 29               JMP  PWR99
                     *******************************
                     * MOVE POWERBALL DOWN-->
                     *******************************
                     PDOWN
294E: C6 B9                  DEC  MISLN
2950: D0 34                  BNE  PWR99       ;J DON'T HAVE TO CHG BANDS.
2952: A5 BA                  LDA  MSBAND
2954: F0 EA                  BEQ  VCHG        ;J AT BOTTOM.
2956: 38                     SEC
2957: E9 01                  SBC  #1
2959: 0A                     ASL
295A: 0A                     ASL
295B: 0A                     ASL
295C: 0A                     ASL
295D: A6 BB                  LDX  MISPOF
295F: 20 4E 2D               JSR  FMTEST
2962: D0 DC                  BNE  VCHG        ;J FLD ON.
2964: C6 BA                  DEC  MSBAND
2966: A9 0E                  LDA  #14
2968: 85 B9                  STA  MISLN
296A: 4C 86 29               JMP  PWR99
                                              ;
```

```
                                                      ;

                 * POWERBALL TABLES-->
                 *********************************
                 PWPOF
2960: 08 08 08
2970: FF                      DFB  8,8,8,$FF   ;UDRL
                                               ;
                 PWLN
2971: 08 08 07
2974: 06 05 04
2977: 03 02                   DFB  8,8,7,6,5,4,3,2
2979: 01 01 0E
297C: 0E 0D 0D
297F: 0C 0B                   DFB  1,1,14,14,13,13,12,11
                                               ;
                 * TIME (IN 1/2 SECS) BEFORE BALL AVAIL
                 *********************************
                 PTIME
2981: 02 08 0C
2984: 10 14                   DFB  2,8,12,16,20
                                               ;
                 PWR99
                                               ;
                 *********************************
                 * BANK SWITCH FOR REST OF TOPVI*
                 *********************************
2986: 4C 00 20                JMP  TOPSW
```

```
                  ********************************
                  * BANK1 SUBROUTINES            *
                  ********************************
                           PUT   MR.DO.SUBS1
                  */ MR.DO.SUBS1 LASTED: 8/3/83.
                  ********************************
                  *     S U B R O U T I N E S    *
                  *    FOR  1ST  BANK OF MR.DO!  *
                  ********************************
                  IGAME
2989: A9 00                LDA   #0
298B: 85 84                STA   FRAMEL
298D: 85 85                STA   FRAMEH
298F: 85 81                STA   ROUND         ;RND NUM=0.
2991: 85 82                STA   SCORLO
2993: 85 83                STA   SCORHI        ;INIT SCORE.
2995: 85 8B                STA   ALPHA         ;CLR OUT ALPHA MONSTER REV VIDEO.
                                               ;INIT IDXS TO SPDTBL->
2997: A5 80                LDA   GAME
2999: 0A                   ASL                 ;X 2.
299A: AA                   TAX
299B: 86 C8                STX   DIGSPD
299D: E8                   INX
299E: 86 C9                STX   DIGSPD+1
                                               ;
29A0: A9 00                LDA   #SONG1
29A2: 20 2C 2D             JSR   SONG          ;HI PRIORITY SONG.
                                               ;
29A5: A9 04                LDA   #4            ;4 MR DO'S.
29A7: 85 DB                STA   DOINV         ;INIT MRDO INVENTORY.
                  * INIT RAM FOR NEW ROUND -->
                  IROUND
                                               ;
29A9: A9 06                LDA   #6            ;GET NUM BADGUYS THIS RND.
29AB: 85 8A                STA   DIGINV
                                               ;
29AD: A4 C8                LDY   DIGSPD
29AF: B9 6D 2F             LDA   IQTBL,Y
29B2: 85 CC                STA   DIGIQ
29B4: A4 C9                LDY   DIGSPD+1
29B6: B9 6D 2F             LDA   IQTBL,Y
29B9: 85 CD                STA   DIGIQ+1       ;SET NUM CHAR CELLS TO GO B4 CHANG
E DIR.
29BB: A5 81                LDA   ROUND
29BD: 29 07                AND   #7
29BF: AA                   TAX                 ;ONLY IDX UP TO 7 FOR REST->
                                               ;
29C0: BD 27 2F             LDA   CCTLAD,X      ;CHERRY CONTROL ADDR LO.
29C3: 85 EF                STA   TEMP1
29C5: A9 2F                LDA   #>CCTL1       ;CHERRY CONTROL ADDR HI.
29C7: 85 F0                STA   TEMP2
                                               ;SET UP HI ADDRS-->
29C9: A9 2E                LDA   #>FR1L1       ;FIELD REG DATA ADDR HI.
29CB: 85 F2                STA   TEMP4
29CD: 85 F4                STA   TEMP6
29CF: 85 F6                STA   TEMP8
29D1: 85 F8                STA   TEMP10
                                               ;SET UP LO ADDRS==>
29D3: BD A0 2E             LDA   F1LADR,X      ;FR1 LEFT LO ADDR.
29D6: 85 F1                STA   TEMP3
29D8: BD A8 2E             LDA   F2LADR,X      ;FR2 LEFT LO ADDR.
29DB: 85 F3                STA   TEMP5
29DD: BD B0 2E             LDA   F2RADR,X      ;FR2 RIGHT ADDR LO.
29E0: 85 F5                STA   TEMP7
```

```
29E2: BD B8 2E          LDA   F1RADR,X    ;FR1 RIGHT ADDR LO.
29E5: 85 F7             STA   TEMP9       ;FR1 RIGHT.
29E7: A0 07             LDY   #7          ;8 BANDS
                  IRND
29E9: B1 EF             LDA   (TEMP1),Y
29EB: 99 90 00          STA   CHERRYC,Y   ;CHERRY RAM.
29EE: B1 F1             LDA   (TEMP3),Y
29F0: 99 98 00          STA   FR1L,Y      ;FR1 LEFT RAM MAP.
29F3: B1 F3             LDA   (TEMP5),Y
29F5: 99 A0 00          STA   FR2L,Y      ;FR2 LEFT RAM MAP.
29F8: B1 F5             LDA   (TEMP7),Y
29FA: 99 A8 00          STA   FR2R,Y      ;FR2 RIGHT RAM MAP.
29FD: B1 F7             LDA   (TEMP9),Y
29FF: 99 B0 00          STA   FR1R,Y      ;FR1 RIGHT RAM MAP.
2A02: 88                DEY
2A03: 10 E4             BPL   IRND        ;LOOP TIL 8 BANDS OF RAM DONE.
                                          ;
                  * SET UP APPLE RAM BY ROUND NUM->
                  *  RANDOMLY SEL MAIN POS OR ALT->
                  *******************************
2A05: A9 02             LDA   #2          ;INIT RANDOM MASK.
2A07: BC C0 2E          LDY   AP1POF,X
2A0A: 25 D9             AND   RANDOM
2A0C: F0 03             BEQ   APPLE1
2A0E: BC C8 2E          LDY   AP1POS,X
                  APPLE1
2A11: 84 D4             STY   APPOF
2A13: 0A                ASL
2A14: BC D0 2E          LDY   AP2POF,X
2A17: 25 D9             AND   RANDOM
2A19: F0 03             BEQ   APPLE2
2A1B: BC D8 2E          LDY   AP2POS,X
                  APPLE2
2A1E: 84 D5             STY   APPOF+1
2A20: 0A                ASL
2A21: BC E0 2E          LDY   AP3POF,X
2A24: 25 D9             AND   RANDOM
2A26: F0 03             BEQ   APPLE3
2A28: BC E8 2E          LDY   AP3POS,X
                  APPLE3
2A2B: 84 D6             STY   APPOF+2
2A2D: 0A                ASL
2A2E: BC F0 2E          LDY   AP4POF,X
2A31: 25 D9             AND   RANDOM
2A33: F0 03             BEQ   APPLE4
2A35: BC F8 2E          LDY   AP4POS,X
                  APPLE4
2A38: 84 D7             STY   APPOF+3
                                          ;
2A3A: A9 70             LDA   #$70        ;TOP AP.
2A3C: 85 D0             STA   APBAND
2A3E: A9 50             LDA   #$50
2A40: 85 D1             STA   APBAND+1
2A42: A9 30             LDA   #$30
2A44: 85 D2             STA   APBAND+2
2A46: A9 10             LDA   #$10        ;BOT AP.
2A48: 85 D3             STA   APBAND+3
                                          ;
2A4A: A9 80             LDA   #$80
2A4C: 85 8D             STA   APFALL      ;NO APPLES FALLING.
2A4E: 85 BA             STA   MSBAND      ;PWR BALL IS NOT AVAIL YET.
2A50: A9 02             LDA   #2          ;SHORT DELAY
2A52: 85 BC             STA   MISDIR      ;SET TIME B4 AVAIL COUNT.
                                          ;
                  * PUT MR DO BACK AT BOTTOM OF SCREEN-->
2A54: A9 38             LDA   #56
```

```
2A56: 85 C0            STA   DOPOF
2A58: A9 00            LDA   #0
2A5A: 85 BD            STA   DOBAND
                                        ;
2A5C: 85 C4            STA   DIGDAT
2A5E: 85 C5            STA   DIGDAT+1
                                        ;
2A60: 85 D8            STA   PWRTIM     ;BALL AVAIL IDX.
2A62: 85 8E            STA   ANIMB      ;ACTIVATE CH SELECT.
2A64: A9 80            LDA   #$80
2A66: 85 BE            STA   DIGBAND    ;BOTH DIGS
2A68: 85 BF            STA   DIGBAND+1  ;OFF.
                                        ;
2A6A: A9 10            LDA   #PLAY
2A6C: 85 DA            STA   MODE       ;SET PLAY MODE.
                                        ;UP DIG SPD IDXS->
2A6E: A2 01            LDX   #1
                 DSPD
2A70: B4 C8            LDY   DIGSPD,X
2A72: C8               INY
2A73: C0 14            CPY   #20
2A75: D0 02            BNE   DSPD2
2A77: A0 08            LDY   #8         ;WRAP TO SPD 8.
                 DSPD2
2A79: 94 C8            STY   DIGSPD,X
2A7B: CA               DEX
2A7C: 10 F2            BPL   DSPD
                                        ;
2A7E: 60               RTS
```

```
                ********************************
                * CHERRY VS. DO/DIGGER HITDET  *
                *PARAMS PASSED:                *
                * B7-B4 ACC = BAND NUM OF OBJ  *
                * B3-B0     = LN OFFSET OF OBJ *
                *       Y   = POF IDX OF OBJ   *
                *TEMP RAM USED:                *
                * TEMP1= OBJ POF IDX/8.        *
                * TEMP2= NUM COPIES OF CHERRY  *
                * TEMP3= CHERRY SPACING/8.     *
                * TEMP4= CPOF TBL IDX          *
                * TEMP5= CHERRY CONTROL VALUE. *
                * TEMP6= INDIR ADR LO CCTL TBL *
                * TEMP7=            HI         *
                * TEMP8= ORIG CHERRY POS.      *
                * TEMP9= B4-B7= OBJ BAND NUM.  *
                *TEMP10= POF TABL IDX OF OBJ.  *
                ********************************
                CHIT
                * TEST IF MD TOTALLY W/I A BAND->
2A7F: 85 F7              STA  TEMP9      ;SV BAND.
2A81: 84 F8              STY  TEMP10     ;SV POF IDX.
2A83: 29 0F              AND  #$0F
2A85: F0 03              BEQ  CH1
2A87: 4C 15 2B           JMP  NOCH
                                         ;
                *TEST IF MD TOTALLY ON A COLUMN->
                ********************************
                CH1
2A8A: A5 F8              LDA  TEMP10     ;GET POF.
2A8C: 29 07              AND  #7
2A8E: F0 03              BEQ  CH2
2A90: 4C 15 2B           JMP  NOCH       ;JP MD NOT ON COLUMN(NO HIT DET).
                CH2
2A93: A5 F8              LDA  TEMP10     ;GET POF.
2A95: 4A                 LSR
2A96: 4A                 LSR
2A97: 4A                 LSR             ;DOPOF/8.
2A98: 85 EF              STA  TEMP1      ;SV IT.
                                         ;
2A9A: A5 F7              LDA  TEMP9      ;GET BAND.
2A9C: 4A                 LSR
2A9D: 4A                 LSR
2A9E: 4A                 LSR
2A9F: 4A                 LSR
2AA0: 29 07              AND  #7
2AA2: AA                 TAX             ;GIVE X BAND NUM.
2AA3: B5 90              LDA  CHERRYC,X  ;GET CHERRY CONTROLS.
2AA5: 30 03              BMI  CHERE      ;JP IF THERE IS A CHERRY IN THIS B
AND.
2AA7: 4C 15 2B           JMP  NOCH
                                         ;
                * TEST IF MD HIT A CHERRY-->
                ********************************
                CHERE
2AAA: 29 07              AND  #$07       ;KEEP ONLY REP/SPACING.
2AAC: 85 F3              STA  TEMP5      ;SV CHERRY CONTROL.
2AAE: 0A                 ASL
2AAF: A8                 TAY             ;CONTROL*2.
2AB0: B9 00 2F           LDA  REPSPA,Y
2AB3: 85 F0              STA  TEMP2      ;SV COPIES.
2AB5: B9 01 2F           LDA  REPSPA+1,Y
2AB8: 85 F1              STA  TEMP3      ;SV SPACING/8.
2ABA: B5 90              LDA  CHERRYC,X
2ABC: 4A                 LSR
```

```
2ABC: 4A                    LSR
2ABD: 4A                    LSR
2ABE: 4A                    LSR
2ABF: 29 0F                 AND  #$0F
2AC1: 85 F2                 STA  TEMP4     ;SV CPOF TBL IDX.
2AC3: 85 F6                 STA  TEMP8     ;SV ANOTHER COPY.
2AC5: A2 00                 LDX  #0        ;INIT TRIES COUNT.
                     CH25
2AC7: A5 EF                 LDA  TEMP1     ;GET DOPOF/8.
2AC9: C5 F2                 CMP  TEMP4     ;DOPOF=CPOF?
2ACB: F0 0E                 BEQ  CH50      ;JP YES,HIT.
2ACD: C6 F0                 DEC  TEMP2     ;DEC COPIES.
2ACF: F0 44                 BEQ  NOCH      ;JP IF TRIED ALL COPIES.
                                           ;
                     * ADD SPACING TO CHERRY POS-->
                     ********************************
2AD1: 18                    CLC
2AD2: A5 F2                 LDA  TEMP4     ;ADD SPACING TO CPOF.
2AD4: 65 F1                 ADC  TEMP3
2AD6: 85 F2                 STA  TEMP4
2AD8: E8                    INX            ;UP TRIES COUNT.
2AD9: D0 EC                 BNE  CH25      ;JP ALWAYS,TRY AGAIN.
                     * THERE IS A HIT--->
                     ********************************
                     CH50
2ADB: A4 F3                 LDY  TEMP5     ;GET CCTL(0-6).
2ADD: B9 0E 2F              LDA  HITTBL,Y
2AE0: 85 F4                 STA  TEMP6     ;INDIR LO.
2AE2: A9 2F                 LDA  #>V1C
2AE4: 85 F5                 STA  TEMP7     ;INDIR HI.
2AE6: 8A                    TXA
2AE7: 0A                    ASL            ;TRIES*2.
2AE8: A8                    TAY
2AE9: B1 F4                 LDA  (TEMP6),Y
2AEB: 85 F3                 STA  TEMP5     ;NEW CTL+SIGN.
2AED: C8                    INY
2AEE: B1 F4                 LDA  (TEMP6),Y ;GET NUM TIMES TO ADD SPACING TO C
POF IDX.
2AF0: AA                    TAX
                     * ADD SPACING TO OLD CHERRY POS-->
                     ********************************
                     CH75
2AF1: CA                    DEX
2AF2: 30 09                 BMI  CH80      ;JP WHEN NEW POS DONE.
2AF4: 18                    CLC
2AF5: A5 F1                 LDA  TEMP3     ;SPACING/8.
2AF7: 65 F6                 ADC  TEMP8     ;ADD TO ORIG POS IDX.
2AF9: 85 F6                 STA  TEMP8
2AFB: D0 F4                 BNE  CH75      ;JP ALWAYS.
                     CH80
2AFD: A5 F6                 LDA  TEMP8     ;GET NEW CPOF IDX.
2AFF: 0A                    ASL
2B00: 0A                    ASL
2B01: 0A                    ASL
2B02: 05 F3                 ORA  TEMP5     ;OR CPOF IDX TO CTL.
2B04: 85 F3                 STA  TEMP5
2B06: A5 F7                 LDA  TEMP9     ;GET BAND.
2B08: 4A                    LSR
2B09: 4A                    LSR
2B0A: 4A                    LSR
2B0B: 4A                    LSR
2B0C: 29 07                 AND  #7
2B0E: AA                    TAX            ;GIVE X BAND NUM.
2B0F: A5 F3                 LDA  TEMP5
2B11: 95 90                 STA  CHERRYC,X ;NEW CHERRY CTL+POF.
2B13: 38                    SEC            ;FLAG A HIT.
2B14: 60                    RTS
```

```
2B14: 60          >284            RTS
                  >285  NOCH
2B15: 18          >286            CLC                    ;FLAG NO HIT.
2B16: 60          >287            RTS
                  >288  CNOTE
2B17: 1C          >289            DFB  #CHER1
2B18: 29          >290            DFB  #CHER2
2B19: 36          >291            DFB  #CHER3
2B1A: 43          >292            DFB  #CHER4
2B1B: 50          >293            DFB  #CHER5
2B1C: 5D          >294            DFB  #CHER6
                  >295  CHRPTS
2B1D: 05 05 05
2B20: 05 05 55 >296               DFB  5,5,5,5,5,$55
```

```
                ********************************
                * ADDPTS-ADD ACC. TO SCORE     *
                ********************************
                ADDPTS
2B23: 86 F0              STX  TEMP2
2B25: A6 83              LDX  SCORHI
2B27: 86 EF              STX  TEMP1
                                          ;ADD THE PTS IN->
2B29: F8                 SED
2B2A: 18                 CLC
2B2B: 65 82              ADC  SCORLO
2B2D: 85 82              STA  SCORLO
2B2F: A9 00              LDA  #0
2B31: 65 83              ADC  SCORHI
2B33: 85 83              STA  SCORHI
2B35: D8                 CLD
                                          ;DID 1K CHANGE?
2B36: C5 EF              CMP  TEMP1
2B38: F0 45              BEQ  NOCHG       ;J N.
                                          ;LET ONLY EVERY 2K PTS->
2B3A: 29 01              AND  #1
2B3C: D0 41              BNE  NOCHG
                                          ;
                                          ;
                *  1K DIGIT CHANGED-->
                ********************************
                                          ;
                *IS AN ALPHA MONSTER ALREADY OUT?
                ********************************
2B3E: A9 02              LDA  #2
2B40: 25 8E              AND  ANIM8
2B42: D0 3B              BNE  NOCHG       ;J Y,ALF IS OUT ALREADY.
                                          ;
                                          ;
                *IS CH SELECT @ A REV VIDEO CHAR?
                ********************************
2B44: A5 8B              LDA  ALPHA
2B46: 29 07              AND  #7
2B48: AA                 TAX
2B49: A9 08              LDA  #8          ;LET E.
                ADD44
2B4B: CA                 DEX
2B4C: 30 04              BMI  ADD55
2B4E: 0A                 ASL              ;PREPARE MASK.
2B4F: 4C 4B 2B           JMP  ADD44
                ADD55
2B52: 25 8B              AND  ALPHA
2B54: D0 29              BNE  NOCHG       ;J LET IS REV VIDEO.
                * CHANGE DIGGER TO ALPHA MONSTER
                ********************************
2B56: A6 C8              LDX  DIGSPD
2B58: BD 6D 2F           LDA  DTIME,X     ;TIME B4 XFORM TO DIG.
2B5B: 85 CA              STA  DIGTIM      ;DON'T LET HIM DIG.
                                          ;
2B5D: A5 8B              LDA  ALPHA
2B5F: 29 07              AND  #7
2B61: AA                 TAX
2B62: BD AA 2B           LDA  MONSTR,X
2B65: 85 C4              STA  DIGDAT
2B67: A9 02              LDA  #2
2B69: 05 8E              ORA  ANIM8
2B6B: 85 8E              STA  ANIM8       ;SET FLAG FOR ALF MONSTER OUT.
                                          ;IS THAT DIG ON?
2B6D: A5 BE              LDA  DIGBAND
2B6F: 10 0E              BPL  NOCHG       ;J Y.
```

```
2B6F: 10 0E              BPL  NOCHG      ;J Y.
                                         ;PUT HIM IN CTR->
2B71: A9 38              LDA  #56
2B73: 85 C1              STA  DIGPOF
2B75: A9 40              LDA  #$40
2B77: 85 BE              STA  DIGBAND
2B79: A5 8A              LDA  DIGINV
2B7B: F0 02              BEQ  NOCHG
2B7D: C6 8A              DEC  DIGINV     ;1 LESS DIG IF ANY LEFT.
                  NOCHG
2B7F: A6 F0              LDX  TEMP2
2B81: 60                 RTS
```

```
                 *******************************
                 *MAKE REV VIDEO IF DIG WAS ALF->
                 *******************************
                 REVVID
2B82: A5 8E                 LDA  ANIM8
2B84: 29 FD                 AND  #$FF-2
2B86: 85 8E                 STA  ANIM8         ;CLR ALF OUT.
                                               ;
2B88: A5 C4                 LDA  DIGDAT
2B8A: C9 06                 CMP  #6
2B8C: 90 1B                 BCC  ALFRET        ;J N.
                                               ;YES, REV VIDEO HIS LETTER->
2B8E: 86 F3                 STX  TEMP5         ;SV X.
2B90: A5 8B                 LDA  ALPHA
2B92: 29 07                 AND  #7            ;GET CH SELECT.
2B94: AA                    TAX
2B95: A9 08                 LDA  #8            ;LET E.
                 ALFT5
2B97: CA                    DEX
2B98: 30 04                 BMI  HAVIT
2B9A: 0A                    ASL
2B9B: 4C 97 2B              JMP  ALFT5
                 HAVIT
2B9E: 05 8B                 ORA  ALPHA
2BA0: 85 8B                 STA  ALPHA         ;SET REV VIDEO BIT.
                 *******************************
                 *  CLR ALPHA OUT FLAG-->      *
                 *******************************
                                               ;
2BA2: A9 00                 LDA  #0
2BA4: 85 C4                 STA  DIGDAT
2BA6: A6 F3                 LDX  TEMP5         ;RSTR X.
2BA8: 38                    SEC                ;FLAG Y.
                 ALFRET
2BA9: 60                    RTS
                 * IDX TO ALF MONSTER IMGS(DIGIMG).
                 *******************************
                 MONSTR
2BAA: 06 08 0A
2BAD: 0C 0E                 DFB  6,8,10,12,14
```

```
                 ********************************
                 * PRIMITIVE OBJ MOVE RTNS->    *
                 ********************************
                                               ;
                 *MDOWN - MOVE OBJ DOWN 1 LINE.
                 *       - CHANGE BANDS IF NECESSARY.
                 *       IN: X-> DO,DIG1,DIG2 IDX
                 *             IE. 0,1,2
                 *                             *
                 *      OUT: C=1 = MOVE ILLEGAL BECAUSE:
                 *                 ALREADY AT BOTTOM OR
                 *                 OBJ NOT IN A COLUMN.
                 *            OR APPLE IN WAY.
                 *           C=0 = MOVE OK, AND
                 *           Y = NEW BAND/LN OFFSET.
                 ********************************
                 MDOWN
                                               ;TEST IF LEGAL TO MOVE->
2BAF: B5 C0                LDA  DOPOF,X
2BB1: 29 07                AND  #7
2BB3: D0 40                BNE  NOMOV          ;JP NOT ON COLUMN.
                                               ;
2BB5: B5 BD                LDA  DOBAND,X       ;GET BAND/LN.
                                               ;BAND/LN=0?
2BB7: F0 3C                BEQ  NOMOV          ;JP IN BOTTOM BAND ALREADY.
                                               ;
                                               ;MOVE DOWN->
2BB9: 29 0F                AND  #$0F           ;LN OFFSET=15?
2BBB: F0 11                BEQ  MVD50          ;J IF ABOUT TO TAKE UP 2 BANDS.
2BBD: C9 0F                CMP  #$0F
2BBF: D0 09                BNE  MVD25          ;JP DON'THAVE TO MOVE DOWN A BAND.
2BC1: B5 BD                LDA  DOBAND,X
2BC3: 38                   SEC
2BC4: E9 1F                SBC  #$1F           ;LN=0.
2BC6: 95 BD                STA  DOBAND,X
2BC8: 18                   CLC
2BC9: 60                   RTS
                                               ;
                 MVD25
2BCA: F6 BD                INC  DOBAND,X       ;ADD 1 TO LN OFFSET (LN WAS < 15).
2BCC: 18                   CLC
2BCD: 60                   RTS
                 *  ONLY TEST FOR APPLE IF LN=0
                 ********************************
                 MVD50
2BCE: B5 BD                LDA  DOBAND,X
2BD0: 38                   SEC
2BD1: E9 10                SBC  #$10           ;BAND-1.
2BD3: 85 EF                STA  TEMP1
2BD5: 20 1C 2D             JSR  APTEST         ;APPLE ON  BAND BELOW?
2BD8: D0 17                BNE  MVD55          ;JP NO.
2BDA: B9 D4 00             LDA  APPOF,Y
2BDD: D5 C0                CMP  DOPOF,X        ;APOS>OBJPOS?
2BDF: B0 08                BCS  MVD52          ;JP Y
                 *  APPLE IS TO LEFT-->
                 ********************************
2BE1: 69 07                ADC  #7             ;APOS+7
2BE3: D5 C0                CMP  DOPOF,X
2BE5: B0 0E                BCS  NOMOV          ;JP AP IN WAY.
2BE7: 90 08                BCC  MVD55
                 * APPLE IS TO RIGHT-->
                 ********************************
                 MVD52
2BE9: E9 07                SBC  #7             ;APOS-7
2BEB: 90 08                BCC  NOMOV          ;J AP AT LEFT EDGE
```

```
2BEB: 90 08                  BCC  NOMOV        ;J AP AT LEFT EDGE.
2BED: D5 C0                  CMP  DOPOF,X
2BEF: 90 04                  BCC  NOMOV        ;JP AP IN WAY.
                                               ;
                    MVD55
2BF1: F6 BD                  INC  DOBAND,X     ;OFFSET=1.
                    MVD56
2BF3: 18                     CLC
2BF4: 60                     RTS
                    NOMOV
2BF5: 38                     SEC
2BF6: 60                     RTS
                                               ;
```

```
                ********************************
                *MUP - MOVE OBJ UP 1 LINE.
                *      - CHANGE BANDS IF NECESSARY.
                *    IN:  X-> DO,DIG1,DIG2 IDX
                *          IE. 0,1,2
                *                                *
                *   OUT:  C=1 MOVE IS ILLEGAL BECAUSE:
                *             ALREADY AT TOP OF SCREEN, OR
                *             NOT IN A COLUMN.
                *         C=0 = MOVE OK, AND
                ********************************
                MUP
                                          ;TEST IF LEGAL->
2BF7: B5 C0              LDA  DOPOF,X
2BF9: 29 07              AND  #7
2BFB: D0 F8              BNE  NOMOV       ;JP NOT ON COLUMN.
                                          ;
2BFD: B5 BD              LDA  DOBAND,X
2BFF: 29 0F              AND  #$0F        ;LN=0?
2C01: F0 04              BEQ  MVU50       ;JP YES,MUST MOVE UP A BAND.
                                          ;
2C03: D6 BD              DEC  DOBAND,X
2C05: 18                 CLC
2C06: 60                 RTS
                MVU50
2C07: B5 BD              LDA  DOBAND,X
2C09: C9 70              CMP  #$70        ;AT TOP ALREADY?
2C0B: F0 E8              BEQ  NOMOV       ;JP YES.
                                          ;
2C0D: A9 10              LDA  #$10
2C0F: 18                 CLC
2C10: 75 BD              ADC  DOBAND,X
2C12: 85 EF              STA  TEMP1
2C14: 20 1C 2D           JSR  APTEST      ;APPLE ON BAND?
2C17: D0 1B              BNE  MVU55       ;JP N.
                                          ;
2C19: B9 D4 00           LDA  APPOF,Y
2C1C: D5 C0              CMP  DOPOF,X     ;APOS>=OBJPOS?
2C1E: B0 08              BCS  MVU52       ;JP Y.
                *  APPLE IS TO LEFT-->
                ********************************
2C20: 69 07              ADC  #7
2C22: D5 C0              CMP  DOPOF,X     ;APOS+7>OPOS?
2C24: B0 CF              BCS  NOMOV       ;JP AP IN WAY.
2C26: 90 0C              BCC  MVU55       ;ELSE OK.
                *  APPLE IS TO RIGHT-->
                ********************************
                MVU52
2C28: E9 07              SBC  #7
2C2A: 10 02              BPL  MVU53       ;J N WRAP.
2C2C: A9 00              LDA  #0
                MVU53
2C2E: D5 C0              CMP  DOPOF,X     ;APOS-7>OPOS?
2C30: F0 C3              BEQ  NOMOV
2C32: 90 C1              BCC  NOMOV       ;JP IN WAY.
                MVU55
2C34: B5 BD              LDA  DOBAND,X
2C36: 18                 CLC
2C37: 69 1F              ADC  #$1F        ;BAND=BAND+1,LN=15.
2C39: 95 BD              STA  DOBAND,X
2C3B: 18                 CLC
2C3C: 60                 RTS
                                          ;
```

```
                 ********************************
                 *MRIGHT- MOVE OBJ RIGHT 1 PIXEL.
                 *    IN: X= DO,DIG1,DIG2 IDX.
                 *        IE. 0,1,2
                 *
                 *   OUT: C=1 IF MOVE IS ILLEGAL BECAUSE:
                 *            NOT W/I A BAND, OR
                 *            ALREADY AT RIGHT EDGE OF SCREEN.
                 *        OR AGAINST APPLE AT EDGE.
                 *         C=0 MOVE IS OK, AND
                 *        APPLE IS MOVED IF PUSHED.
                 ********************************
                 MRIGHT
                                             ;TEST IF MOVE IS LEGAL->
2C3D: B5 BD               LDA  DOBAND,X
2C3F: 85 EF               STA  TEMP1         ;SV FOR APTEST.
2C41: 29 0F               AND  #$0F          ;LN=0(W/I A BAND)?
2C43: D0 5F               BNE  NOMVH         ;JP NO.
                                             ;
2C45: B5 C0               LDA  DOPOF,X
2C47: C9 78               CMP  #120          ;AT EDGE ALREADY?
2C49: F0 59               BEQ  NOMVH         ;JP YES.
                                             ;
2C4B: 20 1C 2D            JSR  APTEST        ;AN APPLE ON SAME BAND?
2C4E: D0 33               BNE  MVITR         ;JP NO.
                                             ;
2C50: B5 C0               LDA  DOPOF,X        ;GET POS
2C52: 18                  CLC
2C53: 69 08               ADC  #8
2C55: D9 D4 00            CMP  APPOF,Y       ;PUSHING THE AP?
2C58: D0 29               BNE  MVITR         ;JP N.
                                             ;
2C5A: B9 D4 00            LDA  APPOF,Y
2C5D: C9 78               CMP  #120          ;AT EDGE?
2C5F: F0 26               BEQ  REVDIR        ;JP Y.
                                             ;IS IT A FALLING APPLE?
                                             ;Y=WHICH RAM APPLE IS ON SAME BAND
.
2C61: A5 8D               LDA  APFALL
2C63: 30 0A               BMI  OSIDE         ;J NO AP FALLING.
2C65: 4A                  LSR
2C66: 4A                  LSR
2C67: 4A                  LSR
2C68: 4A                  LSR                ;GET WHICH IS FALLING.
2C69: 85 F2               STA  TEMP4
2C6B: C4 F2               CPY  TEMP4         ;IS IT THE ONE BEING PUSHED?
2C6D: F0 35               BEQ  NOMVH         ;J Y.
                                             ;
                 * IS SOMEONE PUSHING OTHER SIDE?
                 ********************************
                 OSIDE
2C6F: 18                  CLC
2C70: B9 D4 00            LDA  APPOF,Y
2C73: 69 08               ADC  #8
2C75: 20 EF 2C            JSR  APPUSH
2C78: B0 0D               BCS  REVDIR        ;J Y.
                 MVITRA
2C7A: 18                  CLC
2C7B: A9 01               LDA  #1
2C7D: 79 D4 00            ADC  APPOF,Y       ;MV AP.
2C80: 99 D4 00            STA  APPOF,Y
                 MVITR
2C83: F6 C0               INC  DOPOF,X       ;MV OBJ.
2C85: 18                  CLC
2C86: 60                  RTS
```

```
                                        ;
                 * CAN'T MOVE - SOMEONE ON OTHER
                 *  SIDE OF APPLE BEING PUSHED->
                 ********************************
                 REVDIR
2C87: 8A                  TXA
2C88: F0 1A               BEQ  NOMVH      ;J IF MR.DO.
2C8A: A9 03               LDA  #3
2C8C: 95 CB               STA  DIGIQ-1,X
2C8E: 95 C3               STA  DIGDAT-1,X
2C90: A9 83               LDA  #$83
2C92: 95 C9               STA  DIGTIM-1,X ;START DIGGING.
2C94: B5 BD               LDA  DIGBAND-1,X
2C96: 29 70               AND  #$70       ;BOTTOM?
2C98: F0 06               BEQ  DUP        ;J Y.
2C9A: A9 01               LDA  #DOWND
2C9C: 95 C5               STA  DIGDIR-1,X
2C9E: 38                  SEC             ;FLG FAILED.
2C9F: 60                  RTS
                 DUP
2CA0: A9 00               LDA  #UPD       ;RIGHTD
2CA2: 95 C5               STA  DIGDIR-1,X
                                          ;
                 *  NO MOVE HORIZ EXIT-->
                 ********************************
                 NOMVH
2CA4: 38                  SEC
2CA5: 60                  RTS
```

```
                ********************************
                *MLEFT - MOVE OBJ 1 PIXEL LEFT.
                *    ALSO MV APPLE IF PUSHING IT.
                *   IN:  X = DO,DIG1,DIG2 IDX.
                *          IE. 0,1,2
                *                                  *
                *   OUT: C=1 = ILLEGAL BECAUSE ALREADY AT LEFT EDGE, OR
                *                 NOT W/I A BAND.
                *
                *        C=0  MOVE IS OK, AND
                ********************************
                MLEFT
                                            ;TEST IF MOVE IS LEGAL->
2CA6: B5 BD               LDA  DOBAND,X
2CA8: 85 EF               STA  TEMP1        ;SV FOR APTEST.
2CAA: 29 0F               AND  #$0F         ;W/I A BAND?
2CAC: D0 F6               BNE  NOMVH        ;JP NO.
                                            ;
2CAE: B5 C0               LDA  DOPOF,X
2CB0: F0 F2               BEQ  NOMVH        ;JP IF AT LEFT EDGE ALREADY.
                                            ;TEST IF AN APPLE IS ON SAME BAND->
2CB2: 20 1C 2D            JSR  APTEST
2CB5: D0 34               BNE  MVITL        ;JP NO AP ON SAME BAND.
2CB7: B5 C0               LDA  DOPOF,X      ;GET POS.
2CB9: 38                  SEC
2CBA: E9 08               SBC  #8           ;C=1
2CBC: D9 D4 00            CMP  APPOF,Y
2CBF: D0 2A               BNE  MVITL        ;JP NOT PUSHING.
2CC1: B9 D4 00            LDA  APPOF,Y
2CC4: F0 C1               BEQ  REVDIR       ;JP AP AT EDGE.
                                            ;IS IT FALLING AP?
2CC6: A5 8D               LDA  APFALL
2CC8: 30 0A               BMI  OSIDE2       ;J NO AP FALLING.
2CCA: 4A                  LSR
2CCB: 4A                  LSR
2CCC: 4A                  LSR
2CCD: 4A                  LSR
2CCE: 85 F2               STA  TEMP4
2CD0: C4 F2               CPY  TEMP4        ;THIS 1 FALLING?
2CD2: F0 D0               BEQ  NOMVH        ;J Y.
                                            ;
                *  IS SOMEONE PUSHING OTHER SIDE?
                ********************************
                OSIDE2
2CD4: 18                  CLC
2CD5: B9 D4 00            LDA  APPOF,Y
2CD8: 38                  SEC
2CD9: E9 08               SBC  #8
2CDB: 30 05               BMI  MVITLA       ;J NR EDGE.
2CDD: 20 EF 2C            JSR  APPUSH
2CE0: B0 A5               BCS  REVDIR       ;J Y.
                                            ;
                * MOVE BOTH APPLE & OBJ->
                ********************************
                MVITLA
2CE2: 38                  SEC
2CE3: B9 D4 00            LDA  APPOF,Y
2CE6: E9 01               SBC  #1
2CE8: 99 D4 00            STA  APPOF,Y
                MVITL
2CEB: D6 C0               DEC  DOPOF,X      ;DEC OBJ POF.
2CED: 18                  CLC
2CEE: 60                  RTS
```

```
                                        ;

             * SOMEONE ON OTHER SIDE OF APPLE?
             ********************************
             APPUSH
2CEF: 85 EF               STA  TEMP1       ;SV POS.
2CF1: B9 D0 00            LDA  APBAND,Y
2CF4: 29 F0               AND  #$F0
2CF6: 85 F1               STA  TEMP3       ;SV APPLE BAND.
2CF8: 84 F0               STY  TEMP2
2CFA: A0 02               LDY  #2
             APP2
2CFC: B9 C0 00            LDA  DOPOF,Y
2CFF: C5 EF               CMP  TEMP1
2D01: D0 0E               BNE  APP9
                                           ;SAME BAND?
2D03: B9 BD 00            LDA  DOBAND,Y
2D06: 30 09               BMI  APP9        ;J NOT ON.
2D08: 38                  SEC
2D09: E5 F1               SBC  TEMP3       ;DOBAND-APBAND.
2D0B: F0 0B               BEQ  APP99       ;J IN WAY.
2D0D: C9 20               CMP  #$20        ;1 BAND ABOVE?
2D0F: 90 07               BCC  APP99       ;J Y.
             APP9
2D11: 88                  DEY
2D12: 10 E8               BPL  APP2
2D14: 18                  CLC
2D15: A4 F0               LDY  TEMP2
2D17: 60                  RTS
             APP99
2D18: A4 F0               LDY  TEMP2
2D1A: 38                  SEC
2D1B: 60                  RTS
                                           ;
             ********************************
             * APTEST - TEST IF APPLE IS ON A CERTAIN BAND.
             *      IN:  TEMP1=(B4-B7)= BAND IN QUESTION.
             *   OUT:
             *         NZ= NO APPLE ON BAND.
             *          Z= YES, APPLE ON BAND &
             *             Y=IDX FOR WHICH APPLE
             ********************************
             APTEST
2D1C: A0 03               LDY  #3
             APT1
2D1E: B9 D0 00            LDA  APBAND,Y
2D21: 29 F0               AND  #$F0
2D23: C5 EF               CMP  TEMP1       ;AP ON SAME BAND?
2D25: D0 01               BNE  APT9        ;JP NO.
2D27: 60                  RTS              ;RET Z.
             APT9
2D28: 88                  DEY
2D29: 10 F3               BPL  APT1        ;TRY AGAIN.
2D2B: 60                  RTS              ;RET NZ.
                                           ;
                                           ;
             * HI PRIORITY SONG->
             SONG
2D2C: 85 86               STA  AIDX
2D2E: 85 87               STA  BIDX
2D30: A9 00               LDA  #0
2D32: 85 88               STA  ADUR
2D34: 85 89               STA  BDUR
2D36: 60                  RTS
                                           ;
             * LOW PRIORITY SOUNDS->
             LOSND
```

```
2D37: 86 F7              STX  TEMP9     ;SV X,
2D39: A6 BD              LDX  DOBAND
2D3B: 30 0E              BMI  NOSND     ;J MR DO OFF.
             SOUND
2D3D: A6 88              LDX  ADUR
2D3F: 10 0A              BPL  NOSND     ;J SOUND ALREADY ON.
             HISND
2D41: A6 89              LDX  BDUR
2D43: 10 06              BPL  NOSND
2D45: 85 86              STA  AIDX
2D47: A9 00              LDA  #0
2D49: 85 88              STA  ADUR
             NOSND
2D4B: A6 F7              LDX  TEMP9     ;RSTR X,
2D4D: 60                 RTS
                                        ;
```

```
                       PUT  MR.DO.FIELD.RTNS
              */MR.DO.FIELD.RTNS LASTED:8/1/83
              *********************************
              * FIELD MAP TEST - IS A BIT SET*
              *   IN: A = B0-B3 = LN OFFSET  *
              *           B4-B6 = BAND NUM   *
              *       X = POSTBL IDX         *
              *  OUT: Z = BIT IS NOT SET     *
              *       NZ= BIT IS SET         *
              *********************************
              FMTEST
2D4E: 85 EF            STA  TEMP1       ;SV BAND/LN.
2D50: 86 F0            STX  TEMP2       ;SV POSTBL IDX.
2D52: 20 FB 2D         JSR  LSR4Y
2D55: A5 F0            LDA  TEMP2
2D57: 4A               LSR
2D58: 4A               LSR
2D59: 4A               LSR
2D5A: 4A               LSR
2D5B: 4A               LSR              ; /32.
2D5C: AA               TAX
2D5D: BD 9C 2E         LDA  FBANK,X     ;LO ADDR OF FLD BANK.
2D60: 85 F1            STA  TEMP3
2D62: A9 00            LDA  #0
2D64: 85 F2            STA  TEMP4
2D66: A5 F0            LDA  TEMP2       ;POSTBL IDX.
2D68: 4A               LSR
2D69: 4A               LSR              ;/4.
2D6A: AA               TAX
2D6B: BD 7C 2E         LDA  FMASK,X     ;MASK FOR BIT IN QUESTION.
2D6E: 49 FF            EOR  #$FF
2D70: 31 F1            AND  (TEMP3),Y
2D72: 08               PHP
2D73: A5 EF            LDA  TEMP1       ;GET BAND/LN.
2D75: A6 F0            LDX  TEMP2
2D77: 28               PLP
2D78: 60               RTS              ;RET W/ANSWER.
```

```
                 ********************************
                 * CCTEST - CHAR CELL TEST      *
                 *   TEST IF 2 BITS IN FM =0.   *
                 * IN: A = B0-B3 = LN OFFSET    *
                 *         B4-B7 = BAND NUM     *
                 *     Y = POSTBL IDX (0-120)   *
                 * OUT: Z= BITS NOT SET         *
                 *     NZ= AT LEAST 1 BIT IS SET*
                 ********************************
                                      ;ENTRY FOR DIGGERS->
                 CCTST
2D79: 85 EF               STA  TEMP1
2D7B: 84 F0               STY  TEMP2
2D7D: B5 C3               LDA  DIGDAT-1,X
2D7F: 29 FE               AND  #$FE           ;CLR B0.
2D81: 49 02               EOR  #2             ;DIG IMG?
2D83: D0 08               BNE  CCT1           ;J N.
2D85: A9 00               LDA  #0             ;SET EQ.
2D87: F0 26               BEQ  DIGING         ;J Y.
                 CCTEST
2D89: 85 EF               STA  TEMP1          ;SV BAND/LN.
2D8B: 84 F0               STY  TEMP2          ;SV POSTBL IDX.
                                      ;SET UP INDIRECT PTR TO FLD BANK->
                 CCT1
2D8D: 98                  TYA                 ;POS.
2D8E: 4A                  LSR
2D8F: 4A                  LSR
2D90: 4A                  LSR
2D91: 4A                  LSR
2D92: 4A                  LSR                 ;POS/32.
2D93: A8                  TAY
2D94: B9 9C 2E            LDA  FBANK,Y        ;LO ADDR OF FLD BANK.
2D97: 85 F1               STA  TEMP3
2D99: A9 00               LDA  #0
2D9B: 85 F2               STA  TEMP4
                                      ;GET MASK TO "AND"->
2D9D: A5 F0               LDA  TEMP2          ;
2D9F: 4A                  LSR
2DA0: 4A                  LSR
2DA1: 4A                  LSR                 ;POS/8.
2DA2: A8                  TAY
2DA3: B9 E8 2F            LDA  CCMASK,Y       ;MASK FOR 2 BITS.
2DA6: 48                  PHA                 ;SV.
2DA7: A5 EF               LDA  TEMP1
2DA9: 20 FB 2D            JSR  LSR4Y
2DAC: 68                  PLA                 ;GET MASK.
2DAD: 31 F1               AND  (TEMP3),Y
                 DIGING
2DAF: 08                  PHP
2DB0: A5 EF               LDA  TEMP1
2DB2: A4 F0               LDY  TEMP2
2DB4: 28                  PLP
2DB5: 60                  RTS
```

```
                   ********************************
                   * FMRMV - REMOVE 2 BITS IN FLD *
                   *          MAP                 *
                   *   IN: A = BAND/LN            *
                   *       X = POSTBL IDX.        *
                   *  OUT: BITS RMVD IN FLD MAP AT*
                   *     POSIDX AND POSIDX+4.     *
                   *       (ONLY IF LN OFFSET=0)  *
                   ********************************
                   FMRMV
2DB6: 84 F4                    STY  TEMP6        ;SV Y.
2DB8: 85 EF                    STA  TEMP1        ;SV BAND/LN.
2DBA: 86 F0                    STX  TEMP2        ;SV POSTBL IDX.
2DBC: 29 0F                    AND  #$0F         ;LN=0?
2DBE: F0 04                    BEQ  RMV1         ;JP ENTIRELY IN CHAR CELL.
2DC0: C9 01                    CMP  #1
2DC2: D0 34                    BNE  RMV99        ;J NOT JUST 1 LINE DOWN.
                                                 ;
                   RMV1
2DC4: A5 EF                    LDA  TEMP1
2DC6: 20 FB 2D                 JSR  LSR4Y
2DC9: A9 01                    LDA  #1
2DCB: 85 F3                    STA  TEMP5        ;DO THIS 2 TIMES.
                   RMV2
2DCD: A5 F0                    LDA  TEMP2        ;POSTBL IDX.
2DCF: 4A                       LSR
2DD0: 4A                       LSR
2DD1: 4A                       LSR
2DD2: 4A                       LSR
2DD3: 4A                       LSR               ;/32.
2DD4: AA                       TAX
2DD5: BD 9C 2E                 LDA  FBANK,X      ;LO ADDR OF FLD BANK.
2DD8: 85 F1                    STA  TEMP3
2DDA: A9 00                    LDA  #0
2DDC: 85 F2                    STA  TEMP4
                   * NOW GET MASK TO RMV BIT->
2DDE: A5 F0                    LDA  TEMP2        ;POSTBL IDX.
2DE0: 4A                       LSR
2DE1: 4A                       LSR               ;/4.
2DE2: AA                       TAX
2DE3: BD 7C 2E                 LDA  FMASK,X
2DE6: 31 F1                    AND  (TEMP3),Y    ;APPLY MASK.
2DE8: 91 F1                    STA  (TEMP3),Y
2DEA: C6 F3                    DEC  TEMP5
2DEC: 30 0A                    BMI  RMV99        ;JP DONE TWICE.
                                                 ;ADD 4 TO POSTBL IDX->
2DEE: A5 F0                    LDA  TEMP2
2DF0: 18                       CLC
2DF1: 69 04                    ADC  #4
2DF3: 85 F0                    STA  TEMP2        ;NEW POSTBL IDX.
2DF5: 4C CD 2D                 JMP  RMV2         ;DO IT AGAIN.
                   RMV99
2DF8: A4 F4                    LDY  TEMP6        ;RSTR Y.
2DFA: 60                       RTS
                                                 ;

                   LSR4Y
2DFB: 4A                       LSR
2DFC: 4A                       LSR
2DFD: 4A                       LSR
2DFE: 4A                       LSR
2DFF: 29 07                    AND  #7
2E01: A8                       TAY
2E02: 60                       RTS
```

```
                        OBJ  BEGOBJ+$E07
                        ORG  BEGORG+$E07
               ********************************
               * ORCHARD DATA TABLES          *
               ********************************
                        PUT  MR.DO.FIELD DATA
               *MR.DO.FIELD DATA LASTED 7/29/83
               ********************************
               *     ASYM FLD DATA TABLES     *
               ********************************
                                             ;
               FR2R2
2E07: FF 00 FF
2E0A: FF                DFB  $FF,$00,$FF,$FF
2E0B: FF FF FF          DFB  $FF,$FF,$FF
               FR2L1
2E0E: 0F 3F 3F
2E11: 3F                DFB  $0F,$3F,$3F,$3F
2E12: 3F 3F 3F          DFB  $3F,$3F,$3F
               FR2L8
2E15: 0F 3F 3F
2E18: 00                DFB  $0F,$3F,$3F,$00
               FR2R8
2E19: 3F FF FF
2E1C: FF                DFB  $3F,$FF,$FF,$FF
               FR2R1
               FR2R6
2E1D: 00 FF FF          DFB  $00,$FF,$FF
               FR1R4
2E20: FF                DFB  $FF
               FR1L4
               FR2R7
2E21: FF FF FF          DFB  $FF,$FF,$FF
               FR1L3
2E24: 00                DFB  $00
               FR1L1
               FR1L6
2E25: FF                DFB  $FF
               FR2R3
               FR1L5
2E26: FF FF FF          DFB  $FF,$FF,$FF
               FR2R4
2E29: FF                DFB  $FF
               FR1L8
2E2A: FF FF FF
2E2D: 00                DFB  $FF,$FF,$FF,$00
2E2E: 3F 3F 3F
2E31: 3F                DFB  $3F,$3F,$3F,$3F
               FR1R2
2E32: FF C0 CF
2E35: FF                DFB  $FF,$C0,$CF,$FF
               FR1L2
2E36: FF FF FF
2E39: FF                DFB  $FF,$FF,$FF,$FF
2E3A: FF FF FF
2E3D: C0                DFB  $FF,$FF,$FF,$C0
               FR1R5
2E3E: FC FC 00
2E41: FF                DFB  $FC,$FC,$00,$FF
               FR1R8
2E42: FF FF FF
2E45: FF                DFB  $FF,$FF,$FF,$FF
               FR1R1
2E46: C0 0F 3F
2E49: 3F                DFB  $C0,$0F,$3F,$3F
```

```
2E4A: 3F 3F 0F
2E4D: C0                     DFB  $3F,$3F,$0F,$C0
                   FR1L7
2E4E: 3F                     DFB  $3F
                   FR1R7
2E4F: 3F 3F 3F               DFB  $3F,$3F,$3F
                   FR2L3
2E52: 00                     DFB  0
                   FR2L2
2E53: 3F 3F 3F
2E56: 3F                     DFB  $3F,$3F,$3F,$3F
                   FR2L4
2E57: 3F 3F 3F
2E5A: 00                     DFB  $3F,$3F,$3F,$00
                   FR2L6
2E5B: 3F FF FF
2E5E: FF                     DFB  $3F,$FF,$FF,$FF
                   FR2L7
2E5F: 3F 3F 3F
2E62: 3F                     DFB  $3F,$3F,$3F,$3F
                   FR2R5
2E63: 00                     DFB  $00
                   FR1R3
2E64: FF FF FF
2E67: FF                     DFB  $FF,$FF,$FF,$FF
2E68: FF FF 3F
2E6B: 00                     DFB  $FF,$FF,$3F,$00
                                                ;
                   FR2L5
2E6C: 0F 3F 3F
2E6F: 3F                     DFB  $0F,$3F,$3F,$3F
2E70: 3F 3F 3F
2E73: 00                     DFB  $3F,$3F,$3F,$00
                                                ;
                   FR1R6
2E74: C0 0F 3F
2E77: 3F                     DFB  $C0,$0F,$3F,$3F
2E78: 3F 3F 3F
2E7B: 00                     DFB  $3F,$3F,$3F,$00
                                                ;
                                                ;
                   ********************************
                   *  BIT MASKS TO REMOVE BITS IN FIELD REGS 1 & 2, (LEFT & RI
GHT).
                   *  TABLE IS IDXED BY A POSITION/8  (0 TO 31).
                   *  MASK FOUND IS "ANDED" TO APPROP FIELD REG RAM CELL.
                   ********************************
                   FMASK
                   * FR1 LEFT MASKS-->
2E7C: 7F BF DF
2E7F: EF F7 FB
2E82: FD FE                  DFB  $7F,$BF,$DF,$EF,$F7,$FB,$FD,$FE
                                                ;
                   * FR2 LEFT MASKS-->
2E84: FE FD FB
2E87: F7 EF DF
2E8A: BF 7F                  DFB  $FE,$FD,$FB,$F7,$EF,$DF,$BF,$7F
                                                ;
                   * FR2 RIGHT MASKS-->
2E8C: 7F BF DF
2E8F: EF F7 FB
2E92: FD FE                  DFB  $7F,$BF,$DF,$EF,$F7,$FB,$FD,$FE
                                                ;
                   * FR1 RIGHT MASKS-->
2E94: FE FD FB
2E97: F7 EF DF
```

```
2E97: F7 EF DF
2E9A: BF 7F                  DFB  $FE,$FD,$FB,$F7,$EF,$DF,$BF,$7F
                                             ;
                   ********************************
                   * START OF FIELD REG MAPS.
                   * IDX FROM ABOVE IS /8 TO IDX INTO THIS TABLE.
                   * THESE ARE LO BYTE ADDRS TO EACH BANK OF FLD REG DATA.
                   ********************************
                   FBANK
2E9C: 98                     DFB  FR1L
2E9D: A0                     DFB  FR2L
2E9E: A8                     DFB  FR2R
2E9F: B0                     DFB  FR1R
                                             ;
                                             ;
                   ********************************
                   * PTRS TO APPROP FIELD TABLES  *
                   *  BY ROUND NUMBER.            *
                   ********************************
                   F1LADR
2EA0: 25                     DFB  <FR1L1
2EA1: 36                     DFB  <FR1L2
2EA2: 24                     DFB  <FR1L3
2EA3: 21                     DFB  <FR1L4
2EA4: 26                     DFB  <FR1L5
2EA5: 25                     DFB  <FR1L6
2EA6: 4E                     DFB  <FR1L7
2EA7: 2A                     DFB  <FR1L8
                   F2LADR
2EA8: 0E                     DFB  <FR2L1
2EA9: 53                     DFB  <FR2L2
2EAA: 52                     DFB  <FR2L3
2EAB: 57                     DFB  <FR2L4
2EAC: 6C                     DFB  <FR2L5
2EAD: 5B                     DFB  <FR2L6
2EAE: 5F                     DFB  <FR2L7
2EAF: 15                     DFB  <FR2L8
                   F2RADR
2EB0: 1D                     DFB  <FR2R1
2EB1: 07                     DFB  <FR2R2
2EB2: 26                     DFB  <FR2R3
2EB3: 29                     DFB  <FR2R4
2EB4: 63                     DFB  <FR2R5
2EB5: 1D                     DFB  <FR2R6
2EB6: 21                     DFB  <FR2R7
2EB7: 19                     DFB  <FR2R8
                   F1RADR
2EB8: 46                     DFB  <FR1R1
2EB9: 32                     DFB  <FR1R2
2EBA: 64                     DFB  <FR1R3
2EBB: 20                     DFB  <FR1R4
2EBC: 3E                     DFB  <FR1R5
2EBD: 74                     DFB  <FR1R6
2EBE: 4F                     DFB  <FR1R7
2EBF: 42                     DFB  <FR1R8
                                             ;
                   * APPLE STARTING POSITION TABLES->
                   ********************************.
                   AP1POF
2EC0: 28 60 28
2EC3: 18 50 00
2EC6: 08 38                  DFB  40,96,40,24,80,00,08,56
                   AP1POS
2EC8: 08 50 30
2ECB: 70 48 30
2ECE: 38 68                  DFB  8,80,48,112,72,48,56,104
                   AP2POF
```

```
                     >155  AP2POF
2ED0: 68 48 50
2ED3: 28 20 40
2ED6: 40 08          >156             DFB  104,72,80,40,32,64,64,08
                     >157  AP2POS
2ED8: 20 28 18
2EDB: 30 68 70
2EDE: 48 18          >158             DFB  32,40,24,48,104,112,72,24
                     >159  AP3POF
2EE0: 48 68 08
2EE3: 48 08 48
2EE6: 08 40          >160             DFB  72,104,08,72,08,72,08,64
                     >161  AP3POS
2EE8: 58 68 48
2EEB: 40 48 60
2EEE: 28 50          >162             DFB  88,104,72,64,72,96,40,80
                     >163  AP4POF
2EF0: 18 10 70
2EF3: 08 70 30
2EF6: 20 48          >164             DFB  24,16,112,08,112,48,32,72
                     >165  AP4POS
2EF8: 28 30 40
2EFB: 28 28 28
2EFE: 48 00          >166             DFB  40,48,64,40,40,40,72,0
                     >167                              ;
```

```
                         OBJ   BEGOBJ+$F00
                         ORG   BEGORG+$F00
            *******************************
            * CHERRY DATA TABLES          *
            *******************************
                         PUT   MR.DO.CHERRY TABLES
            */MR.DO CHERRY TBL LASTED 8/1/83.
            *******************************
            * CHERRY HIT DETECT TABLES--> *
            *******************************
                                       ;
            * REPITITION,SPACING TABLE-->
            * INDEXED BY CHERRY CONTROL VALUE X 2.
                                       ;
            REPSPA
                                       ;COPIES,SPACING/8->
2F00: 01 00              DFB  1,0      ;1C,0S.
2F02: 02 02              DFB  2,2      ;2C,8S.
2F04: 02 04              DFB  2,4      ;2C,24S.
2F06: 03 02              DFB  3,2      ;3C,8S.
2F08: 02 08              DFB  2,8      ;2C,56S.
2F0A: 00 00              DFB  0,0      ;ILLEGAL
2F0C: 03 04              DFB  3,4      ;3C 24 S.
            * ADDRESSES TO APPROP TRANSITION
            * TABLE (IDXED BY CHERRY CONTROL VALUE).
            *-----------------------------------
            HITTBL
2F0E: 15                 DFB  <V1C      ;1 COPY.
2F0F: 17                 DFB  <V2C8S    ;2 COPY,8 SPACES.
2F10: 17                 DFB  <V2C24S   ;2 COPY,24 SPACES.
2F11: 1B                 DFB  <V3C8S    ;3COPY,8SPACES.
2F12: 17                 DFB  <V2C56S   ;2 COPY,56 SPACES.
2F13: 00                 DFB  0         ;ILLEGAL.
2F14: 21                 DFB  <V3C24S   ;3 COPY,24 SPACES.
                                       ;
            *******************************
            * CHERRY CONTROL TRANSITION   *
            *        TABLES-->            *
            *******************************
                                       ;
            * CHERRIES HIT-TESTED FROM LEFTMOST TO RIGHTMOST CHERRY.
                                       ;
            * INDEXED BY NUM TIMES CHERRY POS HAD TO BE TESTED BEFORE F
OUND.
            * IE (0 TO 2)*2.
            * NEW CONTROL,NUM TIMES TO ADD SPACING TO CPOF,
            ***************************************************
            V1C
2F15: 00 00              DFB  0,0      ;ALL GONE.
            V2C8S
            V2C24S
            V2C56S
                                       ;LEFT->
2F17: 80 01              DFB  $80,1
                                       ;RIGHT->
2F19: 80 00              DFB  $80,0
            V3C8S
                                       ;LEFT->
2F1B: 81 01              DFB  $81,1
                                       ;MID->
2F1D: 82 00              DFB  $82,0
                                       ;RIGHT->
2F1F: 81 00              DFB  $81,0
            V3C24S
                                       ;LEFT->
```

```
                                          ;LEFT->
2F21: 82 01           DFB  $82,1
                                          ;MID->
2F23: 84 00           DFB  $84,0
                                          ;RIGHT->
2F25: 82 00           DFB  $82,0
                                          ;
                                          ;
              ********************************
              *  INITIAL CHERRY POF/CONTROL  *
              *  ADDRESSES BY ROUND NUMBER   *
              * B0-B2= CHERRY CONTROL VALUE  *
              * B3-B6= INDEX TO POFIDX TABLE *
              * B7   = SOME CHERRY,NO CHERRY *
              ********************************
              CCTLAD
2F27: 2F              DFB  <CCTL1
2F28: 3D              DFB  <CCTL2
2F29: 45              DFB  <CCTL3
2F2A: 4D              DFB  <CCTL4
2F2B: 35              DFB  <CCTL5
2F2C: 55              DFB  <CCTL6
2F2D: 5D              DFB  <CCTL7
2F2E: 65              DFB  <CCTL8
                                          ;
              CCTL1
2F2F: 83 83 D3
2F32: D3 C3 C3        DFB  $83,$83,$D3,$D3,$C3,$C3
              CCTL5
2F35: 83 83 93
2F38: 93 C3 C3
2F3B: DB DB           DFB  $83,$83,$93,$93,$C3,$C3,$DB,$DB
              CCTL2
2F3D: 8B 8B C3
2F40: C3 83 83
2F43: DB DB           DFB  $8B,$8B,$C3,$C3,$83,$83,$DB,$DB
              CCTL3
2F45: CB CB 93
2F48: 93 DB DB
2F4B: 83 83           DFB  $CB,$CB,$93,$93,$DB,$DB,$83,$83
              CCTL4
2F4D: 93 93 DB
2F50: DB 83 83
2F53: CB CB           DFB  $93,$93,$DB,$DB,$83,$83,$CB,$CB
              CCTL6
2F55: 83 83 9B
2F58: 9B CB CB
2F5B: 8B 8B           DFB  $83,$83,$9B,$9B,$CB,$CB,$8B,$8B
              CCTL7
2F5D: D3 D3 93
2F60: 93 D3 D3
2F63: 93 93           DFB  $D3,$D3,$93,$93,$D3,$D3,$93,$93
              CCTL8
2F65: 8B 8B CB
2F68: CB 93 93
2F6B: C3 C3           DFB  $8B,$8B,$CB,$CB,$93,$93,$C3,$C3
                                          ;
              *  TIME ( X 2 SEC)  BEFORE A NEW
              *  TURNS INTO A DIGGER.
              *  IDXED BY ROUND.
              ********************************
              IQTBL
              DTIME
2F6D: 09 09 08
2F70: 05 02 07
2F73: 02 04           DFB  9,9,8,5,2,7,2,4
2F75: 09 02 05
```

```
2F75: 09 02 05
2F78: 04 03 02
2F7B: 05 01                  DFB  9,2,5,4,3,2,5,1
2F7D: 01 02 03
2F80: 04                     DFB  1,2,3,4
                    * HOW LONG THEY STAY AS DIGGERS->
                    ********************************
                    DDUR
2F81: 81 81 82
2F84: 82                     DFB  $81,$81,$82,$82
2F85: 85 82 81
2F88: 83                     DFB  $85,$82,$81,$83
2F89: 84 85 84
2F8C: 85                     DFB  $84,$85,$84,$85
2F8D: 83 81 85
2F90: 83                     DFB  $83,$81,$85,$83
2F91: 83 84 81
2F94: 82                     DFB  $83,$84,$81,$82
                                              ;
                    * DIGGER SPEED TABLES-->
                    ********************************
                    * B0=UP SPEED.
                    * B1=DOWN SPEED.
                    * B2=LEFT SPEED.
                    * B3=RIGHT SPEED.
                    *    IDX TBLS BY DIGSPD
                    ********************************
                    SPDTBL
2F95: 00 00 00
2F98: 08                     DFB  0,0,0,8
2F99: 01 04 06
2F9C: 03                     DFB  1,4,6,3
2F9D: 0A 0F 0C
2FA0: 09                     DFB  $0A,$0F,$0C,$09
2FA1: 07 0B 0F
2FA4: 0D                     DFB  $07,$0B,$0F,$0D
2FA5: 0E 0F 0E
2FA8: 0F                     DFB  $0E,$0F,$0E,$0F
                                              ;
                                              ;
                    ********************************
                    * IN X=IDX TO DESIRED SPRITE
                    *    IE. 0=MR DO.
                    *        DIGBAND-DOBAND=1ST DIG.
                    *        DIGBAND+1-DOBAND=2ND DIG.
                    *   OUT C=1=HIT AND MIS IS OFF.
                    *       C=0=NOHIT.
                    ********************************
                    PWRHIT
2FA9: B5 BD                  LDA  DOBAND,X
2FAB: 30 39                  BMI  NOHITP      ;J OBJ NOT ON.
2FAD: 29 0F                  AND  #$0F
2FAF: 85 EF                  STA  TEMP1       ;SV OBJ LN OFFSET.
2FB1: A9 0F                  LDA  #$0F
2FB3: 38                     SEC
2FB4: E5 B9                  SBC  MISLN
2FB6: 85 F0                  STA  TEMP2       ;SV (15-MISLN).
2FB8: B5 BD                  LDA  DOBAND,X
2FBA: 4A                     LSR
2FBB: 4A                     LSR
2FBC: 4A                     LSR
2FBD: 4A                     LSR
2FBE: 38                     SEC
2FBF: E5 BA                  SBC  MSBAND      ;BAND-MSBAND.
2FC1: D0 08                  BNE  PH55        ;J NOT SAME BAND.
                                              ;
2FC3: A5 F0                  LDA  TEMP2
```

```
2FC5: C5 EF                   CMP  TEMP1
2FC7: B0 0C                   BCS  PVHIT        ;J HIT VERTICALLY.
2FC9: 90 1B                   BCC  NOHITP
                    PH55
2FCB: C9 01                   CMP  #1
2FCD: D0 17                   BNE  NOHITP       ;J NOT IN BAND ABOVE.
                                                ;
2FCF: A5 F0                   LDA  TEMP2
2FD1: C5 EF                   CMP  TEMP1
2FD3: B0 11                   BCS  NOHITP       ;J NO V HIT.
                                                ;
                    PVHIT
2FD5: B5 C0                   LDA  DOPOF,X
2FD7: C5 BB                   CMP  MISPOF
2FD9: B0 0B                   BCS  NOHITP       ;J OBJ>MIS.
2FDB: 69 06                   ADC  #6
2FDD: C5 BB                   CMP  MISPOF
2FDF: 90 05                   BCC  NOHITP       ;J OBJ+7<MISPOF.
2FE1: A9 80                   LDA  #$80
2FE3: 85 BA                   STA  MSBAND       ;TURN OFF MIS.
2FE5: 60                      RTS               ;RET W/HIT FLAG.
                    NOHITP
2FE6: 18                      CLC
2FE7: 60                      RTS
                                                ;
                                                ;FLD MASKS->.
                    CCMASK
2FE8: C0 30 0C
2FEB: 03                      DFB  $C0,$30,$0C,$03
2FEC: 03 0C 30
2FEF: C0                      DFB  $03,$0C,$30,$C0
2FF0: C0 30 0C
2FF3: 03                      DFB  $C0,$30,$0C,$03
2FF4: 03 0C 30
2FF7: C0                      DFB  $03,$0C,$30,$C0
                                                ;
```

```
                        OBJ   BEGOBJ+$FFC
                        ORG   BEGORG+$FFC
2FFC: 12 20             DA    PWRUP
                   END
```

--End assembly--

2 bytes

Errors: 0

Symbol table - alphabetical order:

```
    ABORT   =$21C0      ABOVE0  =$222D      ABOVE1  =$2230      ABOVE2  =$2247
    ABOVE3  =$2240      ABOVE6  =$225A      ABOVE7  =$2261      ABVL    =$224C
?   ADAT    =$E5        ADD1K   =$24CD      ADD44   =$2B4B      ADD55   =$2B52
    ADDPTS  =$2B23      ADUR    =$88        AIDX    =$86        ALF99   =$2508
    ALFRET  =$2BA9      ALFT5   =$2B97      ALGONE  =$2058      ALPHA   =$8B
    ANIM8   =$8E        AP1POF  =$2EC0      AP1POS  =$2EC8      AP2POF  =$2ED0
    AP2POS  =$2ED8      AP3POF  =$2EE0      AP3POS  =$2EE8      AP4POF  =$2EF0
    AP4POS  =$2EF8      APBAND  =$D0        APFALL  =$8D        APLEFT  =$2419
?   APOF    =$E7        APP2    =$2CFC      APP9    =$2D11      APP99   =$2D18
?   APPLE   =$233C      APPLE1  =$2A11      APPLE2  =$2A1E      APPLE3  =$2A2B
    APPLE4  =$2A38      APPOF   =$D4        APPUSH  =$2CEF      APRITE  =$2421
?   APRMV   =$23B9      APT1    =$2D1E      APT9    =$2D28      APTEST  =$2D1C
?   ATACOL  =$06    ?   ATACTL  =$04    ?   ATADAT  =$1B    ?   ATBCOL  =$07
?   ATBCTL  =$05    ?   ATBDAT  =$1C        ATBLNK  =$01    ?   ATFCOL  =$08
    ATFCTL  =$0A        ATJBA   =$3C    ?   ATMVIN  =$2A    ?   ATREMV  =$2B
?   ATSALA  =$10    ?   ATSBLA  =$11        ATSCOL  =$09        ATSYNC  =$00
    ATWAIT  =$02    ?   AVAIL   =$2852  ?   BAND    =$DD    ?   BDAT    =$F6
    BDUR    =$89        BEEP    =$08        BEGOBJ  =$8004      BEGORG  =$2000
    BELLS   =$14        BELOW0  =$21FC      BELOW1  =$2201      BIDX    =$87
    BLACK   =$00        BLKWHT  =$281A      BLOL    =$220F      BLOW1   =$27B5
?   BLUE    =$9A        BOOP    =$0E        BOTTIM  =$9F        BOTVI   =$202E
?   BPOF    =$F8        BRKIT   =$24BC  ?   BROWN   =$12        BUT4    =$277B
    BUT5    =$2781      BUTTON  =$2767      CATCH   =$289C      CCMASK  =$2FE8
    CCT1    =$2D8D      CCTEST  =$2D89      CCTL1   =$2F2F      CCTL2   =$2F3D
    CCTL3   =$2F45      CCTL4   =$2F4D      CCTL5   =$2F35      CCTL6   =$2F55
    CCTL7   =$2F5D      CCTL8   =$2F65      CCTLAD  =$2F27      CCTST   =$2D79
    CH1     =$2A8A      CH2     =$2A93      CH25    =$2AC7      CH50    =$2ADB
    CH75    =$2AF1      CH80    =$2AFD      CHER1   =$1C        CHER2   =$29
    CHER3   =$36        CHER4   =$43        CHER5   =$50        CHER6   =$5D
    CHERE   =$2AAA      CHERRYC =$90        CHERRYT =$8C        CHIT    =$2A7F
    CHKHRZ  =$2702      CHRPTS  =$2B1D      CLRAM   =$2017      CNOTE   =$2B17
    CTIME   =$26B2      D1ON    =$2539      DDUR    =$2F81      DEADSND =$00
    DIDMOV  =$22E4      DIGBAND =$BE        DIGDAT  =$C4        DIGDIR  =$C6
    DIGING  =$2DAF      DIGINV  =$8A        DIGIQ   =$CC        DIGPOF  =$C1
    DIGSPD  =$C8        DIGTIM  =$CA        DIR25   =$221B      DIRTBL  =$2324
    DLRU    =$2336      DMASK   =$24CA      DOBAND  =$BD    ?   DODAT   =$C3
    DODEAD  =$20        DOINV   =$DB        DOPOF   =$C0        DOWN    =$272F
    DOWND   =$01    ?   DOWNI   =$04        DRAGEM  =$2441      DRAGIT  =$244C
    DRAGT   =$23F3      DRAGTB  =$20E2      DRLU    =$2330      DSPD    =$2A70
    DSPD2   =$2A79      DTIM9   =$2669      DTIME   =$2F6D      DUP     =$2CA0
    EAT5    =$2518      EATTST  =$2052      EMV     =$21A5      END     =$2FFE
    ENDBOT  =$233C      ENDJOY  =$283B      ENDMV   =$2136      ENDTIM  =$24D9
?   EVO     =$2629      EVO2    =$2637      EVO5    =$264E      EVO7    =$265A
    EVO88   =$266B      EVO99   =$266E  ?   EVOCHK  =$2635      F03     =$238B
    F1LADR  =$2EA0      F1RADR  =$2EB8      F2LADR  =$2EA8      F2RADR  =$2EB0
    F44     =$2398      F47     =$23AA      F55     =$23B1      F57     =$23C8
    FALL99  =$24D7      FALLMON =$237B      FBANK   =$2E9C      FCOLOR  =$8F
    FLDCOL  =$282B      FLDOUT  =$20C9      FMAP2   =$20D8      FMASK   =$2E7C
    FMRMV   =$2DB6      FMTEST  =$2D4E      FR1L    =$98        FR1L1   =$2E25
    FR1L2   =$2E36      FR1L3   =$2E24      FR1L4   =$2E21      FR1L5   =$2E26
```

FR1L2	=$2E36	FR1L3	=$2E24	FR1L4	=$2E21	FR1L5	=$2E26
FR1L6	=$2E25	FR1L7	=$2E4E	FR1L8	=$2E2A	FR1R	=$B0
FR1R1	=$2E46	FR1R2	=$2E32	FR1R3	=$2E64	FR1R4	=$2E20
FR1R5	=$2E3E	FR1R6	=$2E74	FR1R7	=$2E4F	FR1R8	=$2E42
FR2L	=$A0	FR2L1	=$2E0E	FR2L2	=$2E53	FR2L3	=$2E52
FR2L4	=$2E57	FR2L5	=$2E6C	FR2L6	=$2E5B	FR2L7	=$2E5F
FR2L8	=$2E15	FR2R	=$A8	FR2R1	=$2E1D	FR2R2	=$2E07
FR2R3	=$2E26	FR2R4	=$2E29	FR2R5	=$2E63	FR2R6	=$2E1D
FR2R7	=$2E21	FR2R8	=$2E19	FRAMEH	=$85	FRAMEL	=$84
FTST	=$27BA	GAME	=$80	GAMOVR	=$40	? GOLD	=$16
? GOVER	=$25BE	? GREEN	=$D6	HAVDIR	=$2263	HAVIT	=$2B9E
HCHG	=$2903	? HIDATA	=$E6	? HIDATB	=$F7	HISND	=$2D41
HIT2	=$2079	HITTBL	=$2F0E	? HOR99	=$290E	HORV	=$22F7
IGAME	=$2989	II5	=$209E	II9	=$20A4	ILL1	=$26FF
ILLEG	=$274B	INCINV	=$2098	IQTBL	=$2F6D	IRND	=$29E9
IROUND	=$29A9	JOY1	=$26E7	JOY98	=$2765	JOY99	=$2767
JOYADN	=$20	JOYALT	=$40	JOYART	=$80	JOYAUP	=$10
JOYDAT	=$0280	JOYRD	=$26BD	KEEPMV	=$210D	KM5	=$2139
KM7	=$215E	KML2	=$216D	? KMLFT	=$2162	KMRT	=$2184
KMRT2	=$2190	LASTJY	=$B8	? LBLUE	=$96	LDUR	=$2326
LEFT	=$2711	LEFTD	=$03	? LEFTI	=$0C	? LODATA	=$DE
? LODATB	=$EF	LOSND	=$2D37	LSR4Y	=$2DFB	LUDR	=$2332
MDDN	=$229B	MDLT	=$2285	MDLTJP	=$22E1	MDOHIT	=$20A5
MDOWN	=$2BAF	MDRT	=$2268	MDRT2	=$2278	MDRT4	=$2280
MDUP	=$22B1	MID15	=$23E5	MID5	=$23D6	MIDAIR	=$23CD
? MIDTIM	=$AD	MISDIR	=$BC	MISLN	=$B9	MISPOF	=$BB
MLEFT	=$2CA6	MODE	=$DA	MONSTR	=$2BAA	MRIGHT	=$2C3D
MSBAND	=$BA	MUP	=$2BF7	? MUX	=$CE	MVC1	=$20ED
MVCHK	=$20E4	MVD2	=$2147	MVD25	=$2BCA	MVD50	=$2BCE
MVD52	=$2BE9	MVD55	=$2BF1	? MVD56	=$2BF3	MVITL	=$2CEB
MVITLA	=$2CE2	MVITR	=$2C83	? MVITRA	=$2C7A	MVU2	=$211E
MVU3	=$2126	MVU50	=$2C07	MVU52	=$2C28	MVU53	=$2C2E
MVU55	=$2C34	NEWDIR	=$21E3	NEWMOV	=$21A8	NEWRND	=$205F
NF5	=$2359	NF9	=$2364	NG99	=$22F4	NJOY	=$26BA
NM1	=$21D2	NM2	=$21D9	NM3	=$21E0	NMOV	=$20EA
NOBOR	=$2305	NOBOR2	=$2321	NOBUT	=$27CE	NOCH	=$2B15
NOCHER	=$26B6	NOCHG	=$2B7F	NOGOOD	=$22C7	NOHIT	=$20C0
NOHITP	=$2FE6	? NOMORE	=$20A9	NOMOV	=$2BF5	NOMVH	=$2CA4
NOPWR	=$284B	NORES	=$27DA	NOSEL	=$2807	NOSND	=$2D4B
NOTDIG	=$2686	NOTIM	=$251A	NOX	=$261F	NOXTRA	=$256A
NXTTRY	=$2092	NXTTST	=$2453	NYET	=$240A	? ORANGE	=$28
ORGTBL	=$24C6	OSIDE	=$2C6F	OSIDE2	=$2CD4	? PD1	=$FC
? PD10	=$FA	? PD100	=$F8	? PD100K	=$F2	? PD10K	=$F4
? PD1K	=$F6	PDOWN	=$294E	PH55	=$2FCB	PLAY	=$10
PMODE	=$203E	PP2	=$2885	PP3	=$2887	PRIGHT	=$28E8
PTIME	=$2981	? PTR	=$DC	PUR4	=$2922	? PURPLE	=$68
PVHIT	=$2FD5	PWLN	=$2971	PWPOF	=$296D	PWRO	=$288C
PWR2	=$2857	PWR3	=$28A3	PWR55	=$28A5	PWR66	=$28B0
PWR84	=$28C4	PWR86	=$28D7	PWR99	=$2986	PWRDEC	=$284E
PWRDIR	=$2827	PWRHIT	=$2FA9	PWRLN	=$281F	PWRMOV	=$28DC
PWROFF	=$2823	PWRTIM	=$D8	PWRUP	=$2012	RANDOM	=$D9
RDUL	=$232C	? RED	=$22	REPSPA	=$2F00	RESUM	=$80
REVDIR	=$2C87	REVVID	=$2B82	RIGHT	=$2720	RIGHTD	=$02
? RIGHTI	=$08	RMV1	=$2DC4	RMV2	=$2DCD	RMV99	=$2DF8
RNDDWN	=$21F1	RNDLFT	=$224F	RNDRT	=$2235	RNDUP	=$2223
ROUND	=$81	RUDL	=$2338	SAM1	=$27B0	SAME	=$2871
SAME1	=$21C7	? SAMEBD	=$27C5	SB25	=$24A3	SB7	=$2478
SB70	=$2485	SB88	=$24A0	SCORHI	=$83	SCORLO	=$82
? SCRCOL	=$00	SEARCH	=$22CD	SEL2	=$27FF	SELECT	=$30
SETTIM	=$2459	SETTRK	=$2583	SITBRK	=$2462	SOMLFT	=$206F
SONG	=$2D2C	SONG1	=$00	SONG2	=$31	SONG3	=$51
SOUND	=$2D3D	SPDTBL	=$2F95	STFALL	=$2367	? SWIADF	=$40
? SWIBDF	=$80	SWICOL	=$08	SWIRES	=$01	SWISEL	=$02
? SWIT	=$27CE	SWITCH	=$0282	TEMP1	=$EF	TEMP10	=$F8
? TEMP11	=$EC	? TEMP12	=$ED	? TEMP13	=$EE	? TEMP14	=$EA
? TEMP15	=$EB	TEMP2	=$F0	TEMP3	=$F1	TEMP4	=$F2

```
    TEMP5    =$F3        TEMP6    =$F4        TEMP7    =$[illegible]   TEMP8    =$F6
    [illegible] =$3012   TOPSW    =$2000      TOPTI[illegible]         [illegible]
    ULRD     =$232A      UP       =$27[illegible]  [illegible]ALPH =$34[illegible]   [illegible]PD =$[illegible]
?   UPI      =$00        URLD     =$2324      V1C      =$2F15      V2C24S   =$2F17
    V2C56S   =$2F17      V2C8S    =$2F17      V3C24S   =$2F21      V3C8S    =$2F1B
    VCHG     =$2940      VCHG1    =$293E      VCHK     =$2911   ?  VERT99   =$294B
    VTEST    =$2427      W44      =$258A      W45      =$2596      W46      =$25D9
    W47      =$25BA   ?  WAIT2    =$251A      WAIT3    =$254E      WAIT4    =$2577
    WAIT5    =$25E9      WAIT6    =$2601      WAIT7    =$2605   ?  WHITE    =$0E
    XTRADO   =$70     ?  YELLOW   =$1A
```

Symbol table - numerical order:

```
    ATSYNC   =$00        BLACK    =$00     ?  SCRCOL   =$00     ?  UPI      =$00
    UPD      =$00        DEADSND  =$00        SONG1    =$00        ATBLNK   =$01
    SWIRES   =$01        DOWND    =$01        ATWAIT   =$02        SWISEL   =$02
    RIGHTD   =$02        LEFTD    =$03     ?  ATACTL   =$04     ?  DOWNI    =$04
?   ATBCTL   =$05     ?  ATACOL   =$06     ?  ATBCOL   =$07     ?  ATFCOL   =$08
    SWICOL   =$08     ?  RIGHTI   =$08        BEEP     =$08        ATSCOL   =$09
    ATFCTL   =$0A     ?  LEFTI    =$0C     ?  WHITE    =$0E        BOOP     =$0E
?   ATSALA   =$10        JOYAUP   =$10        PLAY     =$10     ?  ATSBLA   =$11
?   BROWN    =$12        BELLS    =$14     ?  GOLD     =$16     ?  YELLOW   =$1A
?   ATADAT   =$1B     ?  ATBDAT   =$1C        CHER1    =$1C        JOYADN   =$20
    DODEAD   =$20     ?  RED      =$22     ?  ORANGE   =$28        CHER2    =$29
?   ATMVIN   =$2A     ?  ATREMV   =$2B        SELECT   =$30        SONG2    =$31
    CHER3    =$36        ATJBA    =$3C        JOYALT   =$40     ?  SWIADF   =$40
    GAMOVR   =$40        CHER4    =$43        TRACK    =$50        CHER5    =$50
    SONG3    =$51        CHER6    =$5D     ?  PURPLE   =$68        XTRADO   =$70
    JOYART   =$80     ?  SWIBDF   =$80        GAME     =$80        RESUM    =$80
    ROUND    =$81        SCORLO   =$82        SCORHI   =$83        FRAMEL   =$84
    FRAMEH   =$85        AIDX     =$86        BIDX     =$87        ADUR     =$88
    BDUR     =$89        DIGINV   =$8A        ALPHA    =$8B        CHERRYT  =$8C
    APFALL   =$8D        ANIM8    =$8E        FCOLOR   =$8F        CHERRYC  =$90
?   LBLUE    =$96        FR1L     =$98     ?  BLUE     =$9A        BOTTIM   =$9F
    FR2L     =$A0        FR2R     =$A8        TOPTIM   =$A9     ?  MIDTIM   =$AD
    FR1R     =$B0        LASTJY   =$B8        MISLN    =$B9        MSBAND   =$BA
    MISPOF   =$BB        MISDIR   =$BC        DOBAND   =$BD        DIGBAND  =$BE
    DOPOF    =$C0        DIGPOF   =$C1     ?  DODAT    =$C3        DIGDAT   =$C4
    DIGDIR   =$C6        DIGSPD   =$C8        DIGTIM   =$CA        DIGIQ    =$CC
?   MUX      =$CE        APBAND   =$D0        APPOF    =$D4     ?  GREEN    =$D6
    PWRTIM   =$D8        RANDOM   =$D9        MODE     =$DA        DOINV    =$DB
?   PTR      =$DC     ?  BAND     =$DD     ?  LODATA   =$DE     ?  ADAT     =$E5
?   HIDATA   =$E6     ?  APOF     =$E7     ?  TEMP14   =$EA     ?  TEMP15   =$EB
?   TEMP11   =$EC     ?  TEMP12   =$ED     ?  TEMP13   =$EE     ?  LODATB   =$EF
    TEMP1    =$EF        TEMP2    =$F0        TEMP3    =$F1        TEMP4    =$F2
?   PD100K   =$F2        TEMP5    =$F3        TEMP6    =$F4     ?  PD10K    =$F4
    TEMP7    =$F5     ?  BDAT     =$F6        TEMP8    =$F6     ?  PD1K     =$F6
?   HIDATB   =$F7        TEMP9    =$F7     ?  BPOF     =$F8        TEMP10   =$F8
?   PD100    =$F8     ?  PD10     =$FA     ?  PD1      =$FC        JOYDAT   =$0280
    SWITCH   =$0282      TIMER    =$0284      TIME64   =$0296      BEGORG   =$2000
    TOPSW    =$2000      PWRUP    =$2012      CLRAM    =$2017      BOTVI    =$202E
    PMODE    =$203E      EATTST   =$2052      ALGONE   =$2058      NEWRND   =$205F
    SOMLFT   =$206F      HIT2     =$2079      NXTTRY   =$2092      INCINV   =$2098
    II5      =$209E      II9      =$20A4      MDOHIT   =$20A5   ?  NOMORE   =$20A9
    NOHIT    =$20C0      FLDOUT   =$20C9      FMAP2    =$20D8      DRAGTB   =$20E2
    MVCHK    =$20E4      NMOV     =$20EA      MVC1     =$20ED      KEEPMV   =$210D
    MVU2     =$211E      MVU3     =$2126      ENDMV    =$2136      KM5      =$2139
    MVD2     =$2147      KM7      =$215E   ?  KMLFT    =$2162      KML2     =$216D
    KMRT     =$2184      KMRT2    =$2190      EMV      =$21A5      NEWMOV   =$21A8
    ABORT    =$21C0      SAME1    =$21C7      NM1      =$21D2      NM2      =$21D9
    NM3      =$21E0      NEWDIR   =$21E3      RNDDWN   =$21F1      BELOW0   =$21FC
    BELOW1   =$2201      BLOL     =$220F      DIR25    =$221B      RNDUP    =$2223
    ABOVE0   =$222D      ABOVE1   =$2230      RNDRT    =$2235      ABOVE3   =$2240
    ABOVE2   =$2247      ABVL     =$224C      RNDLFT   =$224F      ABOVE6   =$225A
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  ABOVE7  =$2261    HAVDIR  =$2263    MDRT    =$2268    MDRT2   =$2278
  MDRT4   =$2280    MDLT    =$2285    MDDN    =$229B    MDUP    =$22B1
  NOGOOD  =$22C7    SEARCH  =$22CD    MDLTJP  =$22E1    DIDMOV  =$22E4
  NG99    =$22F4    HORV    =$22F7    NOBOR   =$2305    NOBOR2  =$2321
  DIRTBL  =$2324    URLD    =$2324    LDUR    =$2326    ULRD    =$232A
  RDUL    =$232C    DRLU    =$2330    LUDR    =$2332    DLRU    =$2336
  RUDL    =$2338    ENDBOT  =$233C  ? APPLE   =$233C    NF5     =$2359
  NF9     =$2364    STFALL  =$2367    FALLMON =$237B    F03     =$238B
  F44     =$2398    F47     =$23AA    F55     =$23B1  ? APRMV   =$23B9
  F57     =$23C8    MIDAIR  =$23CD    MID5    =$23D6    MID15   =$23E5
  DRAGT   =$23F3    NYET    =$240A    APLEFT  =$2419    APRITE  =$2421
  VTEST   =$2427    DRAGEM  =$2441    DRAGIT  =$244C    NXTTST  =$2453
  SETTIM  =$2459    SITBRK  =$2462    SB7     =$2478    SB70    =$2485
  SB88    =$24A0    SB25    =$24A3    BRKIT   =$24BC    ORGTBL  =$24C6
  DMASK   =$24CA    ADD1K   =$24CD    FALL99  =$24D7  ? THEEND  =$24D7
  ENDTIM  =$24D9    UPALPH  =$24FD    ALF99   =$2508    EATS    =$2518
  NOTIM   =$251A  ? WAIT2   =$251A    D1ON    =$2539    WAIT3   =$254E
  NOXTRA  =$256A    WAIT4   =$2577    SETTRK  =$2583    W44     =$258A
  W45     =$2596    W47     =$25BA  ? GOVER   =$25BE    W46     =$25D9
  WAIT5   =$25E9    WAIT6   =$2601    WAIT7   =$2605    NOX     =$261F
? EVO     =$2629  ? EVOCHK  =$2635    EVO2    =$2637    EVO5    =$264E
  EVO7    =$265A    DTIM9   =$2669    EVO88   =$266B    EVO99   =$266E
  NOTDIG  =$2686    CTIME   =$26B2    NOCHER  =$26B6    NJOY    =$26BA
  JOYRD   =$26BD    JOY1    =$26E7    ILL1    =$26FF    CHKHRZ  =$2702
  LEFT    =$2711    RIGHT   =$2720    DOWN    =$272F    UP      =$273E
  ILLEG   =$274B    JOY98   =$2765    JOY99   =$2767    BUTTON  =$2767
  BUT4    =$277B    BUT5    =$2781    SAM1    =$27B0    BLOW1   =$27B5
  FTST    =$27BA  ? SAMEBD  =$27C5    NOBUT   =$27CE  ? SWIT    =$27CE
  NORES   =$27DA    SEL2    =$27FF    NOSEL   =$2807    BLKWHT  =$281A
  PWRLN   =$281F    PWROFF  =$2823    PWRDIR  =$2827    FLDCOL  =$282B
  ENDJOY  =$283B    NOPWR   =$284B    PWRDEC  =$284E  ? AVAIL   =$2852
  PWR2    =$2857    SAME    =$2871    PP2     =$2885    PP3     =$2887
  PWR0    =$288C    CATCH   =$289C    PWR3    =$28A3    PWR55   =$28A5
  PWR66   =$28B0    PWR84   =$28C4    PWR86   =$28D7    PWRMOV  =$28DC
  PRIGHT  =$28E8    HCHG    =$2903  ? HOR99   =$290E    VCHK    =$2911
  PUR4    =$2922    VCHG1   =$293E    VCHG    =$2940  ? VERT99  =$294B
  PDOWN   =$294E    PWPOF   =$296D    PWLN    =$2971    PTIME   =$2981
  PWR99   =$2986    IGAME   =$2989    IROUND  =$29A9    IRND    =$29E9
  APPLE1  =$2A11    APPLE2  =$2A1E    APPLE3  =$2A2B    APPLE4  =$2A38
  DSPD    =$2A70    DSPD2   =$2A79    CHIT    =$2A7F    CH1     =$2A8A
  CH2     =$2A93    CHERE   =$2AAA    CH25    =$2AC7    CH50    =$2ADB
  CH75    =$2AF1    CH80    =$2AFD    NOCH    =$2B15    CNOTE   =$2B17
  CHRPTS  =$2B1D    ADDPTS  =$2B23    ADD44   =$2B4B    ADD55   =$2B52
  NOCHG   =$2B7F    REVVID  =$2B82    ALFTS   =$2B97    HAVIT   =$2B9E
  ALFRET  =$2BA9    MONSTR  =$2BAA    MDOWN   =$2BAF    MVD25   =$2BCA
  MVD50   =$2BCE    MVD52   =$2BE9    MVD55   =$2BF1  ? MVD56   =$2BF3
  NOMOV   =$2BF5    MUP     =$2BF7    MVU50   =$2C07    MVU52   =$2C28
  MVU53   =$2C2E    MVU55   =$2C34    MRIGHT  =$2C3D    OSIDE   =$2C6F
? MVITRA  =$2C7A    MVITR   =$2C83    REVDIR  =$2C87    DUP     =$2CA0
  NOMVH   =$2CA4    MLEFT   =$2CA6    OSIDE2  =$2CD4    MVITLA  =$2CE2
  MVITL   =$2CEB    APPUSH  =$2CEF    APP2    =$2CFC    APP9    =$2D11
  APP99   =$2D18    APTEST  =$2D1C    APT1    =$2D1E    APT9    =$2D28
  SONG    =$2D2C    LOSND   =$2D37    SOUND   =$2D3D    HISND   =$2D41
  NOSND   =$2D4B    FMTEST  =$2D4E    CCTST   =$2D79    CCTEST  =$2D89
  CCT1    =$2D8D    DIGING  =$2DAF    FMRMV   =$2DB6    RMV1    =$2DC4
  RMV2    =$2DCD    RMV99   =$2DF8    LSR4Y   =$2DFB    FR2R2   =$2E07
  FR2L1   =$2E0E    FR2L8   =$2E15    FR2R8   =$2E19    FR2R1   =$2E1D
  FR2R6   =$2E1D    FR1R4   =$2E20    FR1L4   =$2E21    FR2R7   =$2E21
  FR1L3   =$2E24    FR1L1   =$2E25    FR1L6   =$2E25    FR2R3   =$2E26
  FR1L5   =$2E26    FR2R4   =$2E29    FR1L8   =$2E2A    FR1R2   =$2E32
  FR1L2   =$2E36    FR1R5   =$2E3E    FR1R8   =$2E42    FR1R1   =$2E46
  FR1L7   =$2E4E    FR1R7   =$2E4F    FR2L3   =$2E52    FR2L2   =$2E53
  FR2L4   =$2E57    FR2L6   =$2E5B    FR2L7   =$2E5F    FR2R5   =$2E63
  FR1R3   =$2E64    FR2L5   =$2E6C    FR1R6   =$2E74    FMASK   =$2E7C
  FBANK   =$2E9C    F1LADR  =$2EA0    F2LADR  =$2EA8    F2RADR  =$2EB0
  F1RADR  =$2EB8    AP1POF  =$2EC0    AP1POS  =$2EC8    AP2POF  =$2ED0
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AP2POS  =$2ED8      AP3POF  =$2EE0      AP3POS  =$2EE8      AP4POF  =$2EF0
    AP4POS  =$2EF8      REPSPA  =$2F00      HITTBL  =$2F0E      V1C     =$2F15
    V2C8S   =$2F17      V2C24S  =$2F17      V2C56S  =$2F17      V3C8S   =$2F1[illegible]
    V3C24S  =$2F21      CCTLAD  =$2F27      CCTL1   =$2F2F      CCTL5   =$2F3[illegible]
    CCTL2   =$2F3D      CCTL3   =$2F45      CCTL4   =$2F4D      CCTL6   =$2F5[illegible]
    CCTL7   =$2F5D      CCTL8   =$2F65      IQTBL   =$2F6D      DTIME   =$2F6[illegible]
    DDUR    =$2F81      SPDTBL  =$2F95      PWRHIT  =$2FA9      PH55    =$2FCB
    PVHIT   =$2FD5      NOHITP  =$2FE6      CCMASK  =$2FE8      END     =$2FFE
    TOP2    =$3012      BEGOBJ  =$8004
```